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PRIZE ESSAY

ON

THE URINARY CALCULUS AND LITHOTOMY.

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A TREATISE

ON THE

FORMATION, CONSTITUENTS, & EXTRACTION

OF THE

URINARY CALCULUS;

BEING THE ESSAY
FOR WHICH THE JACKSONIAN PRIZE FOR THE YEAR 1833 WAS AWARDED
BY THE ROYAL COLLEGE OF SURGEONS IN LONDON.

BY

JOHN GREEN CROSSE, ESQ. M.D. F.R.S.

Surgeon to the Norfolk and Norwich Hospital, and Lecturer on Clinical Surgery;
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and Fellow of the Royal Medical and Chirurgical Society, of London;
Corresponding Member of the Société Médicale d'Emulation,
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Norwich

October 20/43—

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OF THE ROYAL MEDICAL SOCIETY OF COPENHAGEN,
OF THE AMERICAN PHILOSOPHICAL SOCIETY AT PHILADELPHIA, ETC.

"Feci quod potui, non ut volui."

LONDON:
JOHN CHURCHILL, PRINCE'S STREET, SOHO.
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PREFACE.

THE text of the following Treatise is the Prize-Essay as presented to the Royal College of Surgeons of London, with only a very few verbal alterations and corrections; the notes to each chapter have been added since the work has been in the printer's hands.

Accustomed to describe every operation for stone that I have either witnessed or performed, I have selected from my case-book a few examples, which constitute the first Appendix.

The second Appendix, based chiefly upon public documents, needs no explanation; the third had its origin in some memoranda drawn out many years ago for a systematic course of reading, and has become so much more extensive than I contemplated, that I now regard it better suited to the German bibliographer than to the practical English surgeon; a catalogue is, however, the briefest record of facts, and thus far the lengthened Appendix supports the rest of the Treatise, into which I have avoided the introduction of theoretical speculations, regarding them as fleeting fashions of the day, that vanish before the constant and steady improvements in our useful science.

J. G. C.

Norwich, 31*st January*, 1835.

PREFACE TO THE PRIZE-ESSAY.

It was in the middle of September last, that I first noticed, in the public journals, the prize-question announced by the Royal College of Surgeons of London, "*On the Formation, Constituents, and Extraction of the Urinary Calculus.*" At that time I was engaged in writing upon another subject, and was unavoidably prevented from commencing the following Essay, until the latter end of October. In the short interval which has since elapsed, I have completed the Essay, under the disadvantage of continual interruptions from an extensive private practice; and taking all these circumstances into account, I can scarcely hope that what I have penned will bear strict inspection, either as to its composition or arrangement.

At the moment of commencing the task, I resolved to adhere to my own experience and a statement of facts, with observations founded upon them, avoiding references and quotations; for I conceived that such a plan alone was suited to a Prize-Essay on a practical subject. The few cases, which I have introduced, are original; the drawings refer to specimens preserved in my own private pathological collection, and have all been made expressly for the occasion since I determined upon this undertaking.

December 20th, 1833.

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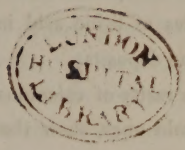

CHAPTER I.

INTRODUCTORY REMARKS ON THE CAUSES OF URINARY CALCULI.

Few subjects in medical science are involved in greater obscurity, than the formation of urinary calculi; to enter fully into the causes which immediately give rise to them, or in some degree influence their production, would engross as much space as a single essay ought to occupy, and the subject not being particularly referred to, in the prize-question proposed by the Royal College of Surgeons, I shall make only a few remarks by way of introduction.

It is placed beyond doubt, that the great and prevailing source of urinary deposits in the human body is *dyspepsia*, arising generally from the food being taken in too large a quantity, or its being not sufficiently digestible, leading to the generation of acid in the stomach, and of a superabundance of a peculiar animal substance, the lithic acid, in the urine. Where digestion is perfectly performed, there can be little fear of the formidable malady about to be treated of arising, the rest of the system being healthy. The errors into which pathologists have fallen seem to me attributable to their looking for one cause only of this disease, which generally requires the concurrence of several for its production. It is true that dyspepsia is continually happening, without producing urinary concretions; but it invariably creates some derangement in the excretion of the urine, disposing to their formation: and where dyspepsia is united with other exciting causes, as want of exercise, variable climate, peculiar diathesis, or local disease in some part of the urinary organs, calculous concretions are most liable to arise.

The food and drink taken have sometimes a direct influence in producing urinary concretions, independent of dyspepsia, as is found to be the case with

spirituous liquids or acids, which quickly determine the appearance of crystallized particles of lithic acid in the urine; and alkalies act in the same way, creating alkaline deposits.

The rarity of calculous disorders in hot climates,[1] and their entire absence in very cold ones, shew the great influence of the atmosphere in their production. The temperate zone, in which alone diseases of this class can be said to prevail, probably exerts an influence in more ways than we can explain: the sudden variations of the thermometer is one of the most obvious of circumstances calculated to affect the human frame; a rapid and great fall of temperature checks the principal function of the skin by diminishing the quantity of perspired fluid, and the kidneys, as vicarious organs, are required to perform more duty. It is observed that where a sudden call arises for greater activity of function in any organ, and particularly if such call be frequently renewed, a greater liability to disease of that organ is induced.[2] That the kidneys act in strict sympathy with the skin, is one of the best established facts in physiology; and the influence of climate must therefore be great upon the quality and quantity of the urinary excretion.

In the county of Norfolk, where undoubtedly calculous disorders are very prevalent, perhaps even more so than in any other district of the united kingdom, neither the food, soil, nor beverage, so far as I have been able to ascertain, have any particular share in determining such a result. Minute observations upon the climate might better explain the matter; the great prevalence of a north-east wind, and the frequent, sudden, and very considerable changes of temperature, acting

[1] In a recent publication, so many cases of urinary calculi, originating in a hot climate, are related, as to make us doubt about the great rarity of the disease in such locality. Mr. Burnard gives thirteen cases occurring in natives of Bengal, twelve of them operated on in one year; he also quotes two congenital cases, one in an infant of four months, the other at six months. Mr. Brett gives seven cases of lithotomy performed on natives of India, chiefly boys. Other cases are related by Messrs. Lindesay, Spry, Turning; the last stating, that the analysis of thirty-one calculi shewed lithic acid and lithate of ammonia the most frequent, then oxalate of lime. *Trans. of the Med. Society of Calcutta*, vol. v, pp. 249, 259, 260, 263, 264, 273.

[2] "It is a law of nature, that the more an organ is called into action, the more it is liable to disease, which is but a derangement of its action."—*Richerand.*

upon persons already affected with the most prevailing disorders of the district, dyspepsia, scrofula, or rheumatism, cannot but be regarded as most powerful agents in giving rise to such frequent cases of gravel and stone. I have repeatedly known persons, who were free from gravelly complaints whilst residing in the metropolis, affected by them on spending a few weeks in the county referred to, and relieved, or entirely freed from them on a change of residence, although in each situation they followed carefully the same diet. Can we disregard climate, and the peculiar state of the atmosphere, in our attempts to explain such effects?

The local causes of calculous disorders, such as are situated in some parts of the urinary organs themselves, are more readily ascertained and better understood. A blow upon the loins, injuring the structure of the kidney, or deranging its functions, has been often known to give rise to calculous deposits. Whatever creates inflammation of the lining membrane of the pelvis of the kidney, will usually induce the same effects, more especially when the diseased action leads to a preternatural mucous secretion from the surfaces over which the urine, after escaping from the tubuli, passes, in its course towards the bladder.

It may be generally stated that, whatever interrupts the free evacuation of the urine, in any part of the organs destined for the formation or passage of this fluid, becomes a disposing cause to calculous deposits. Stricture of the urethra is amongst the most common and powerful of such interruptions, acting upon the whole course of the urinary passages, detaining the urine in the bladder, producing irritation, and at length chronic inflammation of the lining membrane of each cavity, and in the end, a catarrhal secretion from its surface. A stricture also causes stone, by detaining in the urethra or bladder, such small concretions as would otherwise pass readily away.

In the case to which plate xvi, fig. 1, refers, there was extreme stricture of the membranous part of the urethra, going on for several years, and bringing the lining membrane of the passage between it and the bladder, and the inner coat also of this latter viscus, into a morbid condition, so that much mucus was furnished by them, and deposited from the urine. The diseased action thus established, extended, by continuity of surface, even to the kidneys, and at length gave

rise to a calculous deposit, which, arriving in the bladder, was detained there, and further aggravating the disease, accompanied also by perinæal fistulæ, grew to the size and singular shape represented in plate i, fig. 10. The bands of organized lymph, forming a net-work across the enlarged urethra behind the stricture, prove the severity of inflammatory action that arose; and a small calculus, passing from the bladder, is caught behind this net-work and permanently fixed there. In plate x, fig. 1, the fatal effects of urethral stricture, in inducing disease in the whole of the urinary organs situated posterior to it, as well as in causing stone, is still better illustrated. The lengthened explanation I have given of this plate, and the future reference that will be made to it in the text, render a detail of the case unnecessary. Plate xii, fig. 2, also is an example of the same consequence of stricture.

Enlargement or hypertrophy of the prostrate gland is so common in the very aged, particularly those of studious and sedentary habits, that a majority of such persons, who have attained the age of seventy years, are in some degree affected by it, suffering from dysury, and frequent, painful micturition. This prostatic disease disposes to calculous deposits, both in the kidney and bladder, particularly in the latter, by inducing chronic inflammation and a catarrhal state of the inner coat of the organ, by keeping a quantity of urine always stagnant in the bladder, and by preventing the passage outwards through the urethra of smaller concretions, which in the young or middle-aged person would readily take that favourable course. A Mr. K. whom I long attended with an enlarged prostate gland, and afterwards with stricture and stone in the bladder, afforded me the specimen represented in plate xiv, fig. 1, where there is found a stricture in the membranous part of the urethra, very enlarged prostate gland, and thickened contracted bladder with a very vascular and morbidly sensible lining membrane. The bladder contained the calculus represented in plate i, fig. 6, the ureter of one side was much enlarged and thickened; and the corresponding kidney was altered in form, its pelvis enlarged, the lining membrane very vascular, and a part of the parenchyma gangrenous (fig. 2.) There is reason to believe that in this case, which I watched from its commencement, during several years, to its fatal termi-

nation, that the enlarged prostate gland was the first disease present, the urethral stricture, stone, and morbid condition of bladder, ureters, and kidney, all resulting from it. Plates ix and xv are further illustrations of stone in the bladder, from an enlarged prostrate gland.

Hernial displacement of the bladder,[3] sacculi formed by its inner membrane passing between the fibres of the muscular coat, and prolapsus of the organ (which

[3] Cystocele disposes strongly to the formation of an urinary calculus, and in all the various situations in which this species of hernia has been found, as inguinal, femoral, ventral, ischiatic, pudendal, and perinæal, a stone may be met with. Schreger describes a cystocele at the ischiatic notch, forming an external tumour, which, being not understood, was opened or cut off. *(Chirurgische Versuche,* b. 2.*)* The least rare is cystocele at the groin, descending into the scrotum. Plater opened such a hernia by mistake, the urine flowing through the orifice at the groin. In a similar case, an ignoramus mistook such a swelling for an abscess, and made an opening into the protruded bladder, which Guyon succeeded in healing, keeping a catheter in the urethra. Bartholin *(Hist. Anat. Cent.* iv, 28,*)* sounded a man without feeling a stone; but found one on dissection, in a part of the bladder, prolapsed at the groin into the scrotum: the reported instances of calculi discharged at the groin are explainable by such cases. In a vesical hernia reaching into the scrotum, Petit le Père felt several small calculi. The most interesting case of cystocele at the groin, opened by mistake, is given by Pott, in Philosophical Transactions for 1764, and to be found in his works, by Earle, vol. iii, p. 323. Beaumont, by placing a truss on a hernia of the bladder at the groin, containing a calculus, caused the death of the patient. Verdier *(Recherches sur la Hernie de la Vessie, in Mem. de l'Acad. de Chirurgie,* tom. ii, p. 7) found four calculi as big as a small chesnut in a hernia of the bladder at the groin; and relates a similar case, where the tumor was opened by caustic. (p. 10.) Besides the excellent Memoir of Verdier, see *Divoux, Diss. Medico-chirurgica de Hernia Vesicæ Urinariæ, in Halleri Disp. Chir.* tom. iii, p. 271. A case of inguinal cystocele, with calculi, is related in *Edinb. Med. and Surg. Journal,* vol. xiv, p. 141. Boyer treats at length upon cystocele, and remarks that a calculus may fill up the isthmus between the hernial and pelvic portion of the vesical cavity, so as to interrupt the diagnosis. *(Maladies Chirurgicales,* tom. viii, p. 360.) Calculi occurring in a hernial or prolapsed part of the bladder, can only be detected by the touch, and when the tumour presents itself externally; the rarity of their occurrence is scarcely to be urged as a reason for not attending to them, considering that in a majority of recorded cases they have been overlooked or misunderstood. Their prevention depends upon treating the cystocele by a truss, and when formed, they should not be pressed into the general cavity of the bladder, but removed by a direct opening in the situation of the tumour, an operation presenting little difficulty or danger, as the bladder does not carry the peritonæum before it, has no hernial sac, and does not interest the peritoneum, unless complicated by an enterocele; (for the anatomy of cystocele under this complication, see *Sir A. Cooper on Hernia, edited by Mr. Key,* part ii, p. 63.) The urine should be conducted off by a catheter, the patient lying on the side opposite to the disease, and no attempt made to return or compress the hernial tumour, until the opening into the bladder is healed.

occurs only in the female,[4]) are so many disposing causes to stone, by creating dysuria, giving rise to an inflammatory and catarrhal state of the bladder, and detaining a quantity of urine constantly within some part of its cavity.

Extraneous substances, as a particle of lymph or of coagulated blood, a portion of bougie, or any other foreign body introduced from without, placed in any of the urinary cavities, so that the urine comes in contact with it, will become the nucleus of a calcareous deposit in any constitution, and in a torrid as well as temperate climate. Such concretions around an extraneous substance are usually alkaline, and there is reason to believe that they are not furnished exclusively by the urine, as it is discharged from the tubuli, but in some measure by the morbid secretion from the lining mucous membrane, whether of pelvis of the kidney, or of bladder, in consequence of the irritation and chronic inflammation excited by the extraneous substance.

Sedentary habits rank amongst the circumstances disposing to urinary concretions, by favouring indigestion, gout, and enlargement of the prostate gland:—and where dyspepsia is present, all the causes enumerated act with greater force, and the result is produced with most certainty, by two or more causes combining together.

[4] A calculus weighing twenty-three ounces, contained in the prolapsed bladder of a female, and presenting an external tumour big as a child's head, is related in *Lond. Med. Phys. Journal*, vol. vi, p. 391; its nature was not known till after death, or it might have been easily removed by an incision through the coats of the bladder. Ruysch removed forty-two calculi from the prolapsed bladder of a woman aged eighty, successfully. (*Observ. Anat. Chir.* obs. 1.) Tolet relates the like to have occurred in his own practice.

CHAPTER II.

ON THE CHEMICAL COMPOSITION OF URINARY CALCULI.

By the labours of modern philosophers, our knowledge of the chemical composition of urinary concretions has become so complete, that the discovery of new compounds is scarcely to be expected; and the only chance of further improvement in this department is to be sought for by directing our enquiries into a new channel. Some of our ablest chemists, and amongst them the late Dr. Marcet, frequently analyzed the exterior surface only of urinary calculi, without examining the interior; the account, sometime since published, of a very large collection of calculi removed by cystotomy was derived from such a superficial examination, and consequently a considerable proportion of triple-phosphate and fusible calculi was reported; in many instances, however, and more especially under the able hands of Dr. Yelloly and Dr. Prout, calculi have been minutely examined, layer by layer, after a section, affording us a more valuable result, and shewing the greater prevalence of lithic acid and oxalate of lime.

The analysis of every part of a calculus is of use; but the nucleus is calculated to excite most interest, because its analysis bears so directly upon the prevention of the disease; nearly all calculi situated in the bladder are formed upon nuclei of smaller calculi, originating in this organ or descending from the kidney, and of a size that would allow of their passing away by the urethra; hence it follows, that calculi of small size, such as often pass away spontaneously, resemble the nuclei of larger calculi, and are more deserving of being examined chemically than the surfaces of calculi found in the bladder after death, or removed by cystotomy. Entertaining this opinion, I began several years ago to collect all urinary concre-

tions passed per urethram; and the first hundred, obtained from the male, being analysed before receiving a place in my cabinet, gave this result:—

Lithic acid or lithate of ammonia	72
Lithic acid and oxalate of lime	9
Oxalate of lime	14
Carbonate of lime	1
Triple phosphate	2
Fusible	2
Total	100

Beside such calculi being the most valuable for analysis, another advantage is afforded, in the opportunity of their being collected in great numbers; for calculi passed by the urethra are far more frequent, especially in young persons, than those of larger size, removed from the bladder by operation, or found on inspection post mortem.

The great proportion of calculi, in the above table, containing lithic acid, is remarkable, though not more so than that oxalate of lime should be met with in nearly one fourth, or in twenty-three out of a hundred.

The analysis of oxalate of lime is one of the simplest of chemical processes, and can be effectually done, upon the smallest portion, even the hundredth part of a grain, so as readily to detect its presence. A particle of this concretion, being submitted to the flame of a spirit-lamp, urged by the common blow-pipe, a drop of dilute nitric acid is applied to the residue, and immediately globules of air are extricated, and can be seen rising through the fluid, with a magnifying glass, or even with the naked eye; these globules of air are carbonic acid gas, the heat applied having been just sufficient to decompose the oxalic acid, and out of its elements carbonic acid gas was formed, which united with the lime.

Carbonate of lime, a very rare form of human urinary concretion, gives out globules of carbonic acid gas, on the addition of dilute nitric acid, before the heat

of a spirit-lamp has been applied, which distinguishes it from oxalate of lime, upon which dilute nitric acid produces no effervescence, until by heat the chemical changes just described have taken place.

The correction of one error of a writer of high authority is nearly equal to the statement of a new fact, which is my reason for offering these brief remarks upon a simple test for oxalate of lime, Dr. Marcet[5] having stated that when a portion of this concretion is submitted to a gentle heat, the oxalic acid is driven off and pure lime left; but this change will not happen, unless an intense heat be applied, the flame of a spirit-lamp, urged by the common blow-pipe, producing only the changes I have described, and leaving carbonate of lime.

[5] *Marcet's Essay on Calculous Disorders*, 1817, p. 121. Brugnatelli gives correctly the analysis: "I calcoli di ossalato di calce facilmente si riconoscono spingendoli al' fuoco entro un crogiuolo; la decomposizione dell' acido dà origine a dell' ossicarbonico, il quale si combina alla calce; si ha quindi un residuo che fa effervescenza cogli acidi, o che, si il calore fu intenso, si scioglie nell' acqua, ed essa acquista i carratteri dell' acqua di calce." *Litologia Umana*, p. 29.

CHAPTER III.

OF THE MECHANICAL COMPOSITION AND GROWTH OF VESICAL URINARY CALCULI.

The specific gravity and attraction of aggregation of urinary concretions are found to bear a nearly uniform relation to their chemical composition; those composed of oxalate of lime are the heaviest and usually the hardest; those of lithic acid stand next in order, as to specific gravity and tenacity. Phosphate of lime and the ammoniaco-magnesian phosphate are much lighter, being mixed with much animal matter, and soft so as readily to separate in small portions.

Calculi of lithic acid or lithate of ammonia, with a little oxalate of lime, although heavy and dense, are sometimes remarkably friable, and will occasionally break in the bladder, from violence done in sounding, or when there are several, (as often happens with calculi of this composition,) by knocking against each other. I lately obtained, from a gentleman after a ride on horseback, numerous fragments thus produced; and in my cabinet there are twenty-two calculi, removed after death from a patient seventy years of age, which are of very irregular shape, but admit of being so arranged, as to form four regular oval-shaped calculi, each about the size of a pigeon's egg, which, with the appearance of the different surfaces, proves that the calculi had broken in the bladder, by knocking against each other under some sudden movement of the body, (see plate ii, fig. 8.) The encrusted state of the fractured surfaces shews that the calculi were broken sometime before the death of the individual. Accounts may be found of the patient having heard calculi knock against each other in the bladder,[1] which is rendered less surprising,

[1] Covillard quotes a patient who could feel the calculi shake in his bladder; nine were removed. *Obs. Iatrochir.* p. 44. *Fabricius ab Aquapendente* mentions that where calculi are numerous, as well as of considerable size, they have been felt by the patient to move against each other—" strepitum in motu ægrotantes persentiunt. *Opera Chirurgica*, p. 541.

after finding that they may strike each other so hard as to be broken up into small fragments.

Some angular urinary calculi, with flat surfaces, resembling biliary calculi, when in considerable number in the gall-bladder, are I conceive formed by fracture; such as are represented in fig. 4 of plate ii furnish an example; thirty were removed by cystotomy from one patient; they are of different sizes, but mostly of an angular shape, with flat smooth surfaces, very light in colour, and composed of lithic acid and oxalate of lime.

When a calculus is once formed in the urinary bladder, and has attained too great a size to pass away by the urethra, it is correct to state, that it will generally go on increasing in size, so long as the patient lives to be tortured by its presence. It cannot however be denied, that if the patient maintain good health, the urine be kept in a normal state, and the coats of the bladder or of other parts of the urinary passages do not take on diseased action, the stone may remain for a time stationary as to size;[2] this is a point so doubtful and difficult, that many examples must be collected before it can be settled. I have met with only one, in the case of a patient who, twenty years before his death, was assured by his surgeon, after sounding, that he had a stone; he refused the operation, and at the end of that number of years died, and the stone found in his bladder weighed only six drachms and one scruple, and was composed of almost pure lithic acid.

If any calculi can remain stationary as to size in the human bladder, I should expect those of lithic acid or oxalate of lime to do so; these being the calculi of slowest growth, and accompanied by the least degree of disease in the lining membrane of the bladder. In general, calculi when once formed go on increasing; and the estimate I venture to make, from a careful comparison, in a vast many instances, between the duration of the symptoms and the size of the stone removed by cystotomy, is that a concretion of lithic acid or oxalate of lime will, in an adult,

2 Delpech gives the doctrine that a calculus, having attained to a certain size, may cease to increase, and the bladder become accustomed to its presence, so that very little pain is suffered. "L'experience prouve que dans certains cas, vingt-ans n'ont pas suffit pour porter la volume d'une pierre au point de rendre son extraction indispensable." *Précis des Maladies Reputées Chirurgicales*, tom. 2, p. 227.

usually grow between one and two drachms in a year, rarely exceeding the latter. The actual increase, in all probability, will be greater, the larger the stone and more extensive the surface presented; but I have never found reason to believe that, in calculi of moderate size, above four drachms have been deposited in a year; the largest vesical calculi I have met with, weighing from eight to twelve ounces, have been fifteen or twenty years in forming. The following case demonstrates the rate of increase with some accuracy in a particular instance.

A patient was lithotomized, and two lithic acid calculi, weighing seven drachms and a half, were removed, one of which broke into several portions under pressure of the forceps. The patient recovered from the operation, but soon had a recurrence of symptoms of stone, which he bore for above seven years, when he died aged seventy six. The calculus found in his bladder weighed ℥ij ℥ij ℈j, and presented on a section a clear exhibition of a portion of the calculus left in the bladder at the time he was lithotomized, and which formed the nucleus of the subsequent deposit, (see fig. 3 of plate i.) The calculus is composed of lithic acid, and about two ounces were deposited in the period of seven years and a half.

Calculi, composed of the phosphates, are to be regarded in all respects as the worst form of the disease, and I question if they ever remain stationary in size; sometimes they increase with great rapidity. I successfully lithotomized a gentleman, who had suffered symptoms of stone only between three and four months; the concretion had taken place upon a soft nucleus of mucus, under a very morbid and catarrhal state of the bladder, with the prostate gland a little enlarged, and a stricture of the urethra. The calculus was so brittle, that it broke into a hundred pieces; and the fragments weighed above four drachms and a half. The soft nucleus occupied so large a space, that the calculus must have measured an inch in diameter; its composition was fusible, with a slight trace of lithic acid.

It may be remarked that all calculi of slow growth are firm and hard, and of considerable specific gravity; those formed rapidly present the opposite qualities. By comparing the size of a calculus, as discovered on sounding, with the time it has been forming, as indicated by the history of the symptoms, you may arrive at an useful estimate of its density, and the composition, mechanical and chemical, of its interior.

The importance of studying the nuclei of urinary concretions has already been pointed out, and is so forcibly impressed upon my mind by experience and observation, that I could write a long essay upon this single topic; I must however now limit myself to the few following illustrations.

A calculus may receive a sudden increase by the coalition of two smaller calculi, about which a deposit takes place, so as to form a double nucleus, as represented in plate i, fig. 1, being the section of a calculus which I removed from a girl by cystotomy.[3]

Most frequently the accretion around a nucleus is regular, and formed in successive layers, whether composed of lithic acid, or oxalate of lime, or one of these alternating with the phosphates. In order to have this regular deposit upon all sides of a central nucleus, the stone must, I conceive, be moveable in the bladder; where the stone rests in one position, the fresh accretion will not be met with so much on the surface which presses against the bladder, and the nucleus will not be central. The example in fig. 2 of plate i, shews this fact; the patient, for a long time before death, kept in bed, lying on his back, and the flat oval stone, formed in the bladder subsequent to stricture of the urethra, rested constantly upon one of its flat sides, leaving the other exposed to the urine; the weight of the stone was sufficient to keep it in contact with the bladder, and the fresh accretion took place principally upon the free surface, which was rough and more convex than the other; the nucleus was of course not in the centre, but situated as is shewn by a section, which explains in what way the successive layers were deposited.

A more striking example of an eccentric nucleus is represented in fig. 6 of plate i; the calculus was found in the bladder already described and referred to, (plate xiv, fig. 1;) the patient was long recumbent on his back before death; the inferior surface of the calculus on which it rested in contact with the bladder, was smooth, and the nucleus situated near to it. No one can doubt, from the appearances

[3] In the case of Sir W. Ogilvy, where the calculus weighed forty-four ounces, (the largest vesical calculus met with,) it is said to have consisted "of several large calculi united together by fresh deposit of calcareous and animal matter." *Philosophical Transactions* for 1809, p. 303.

of a section of this calculus, and the smoothness of the surface near which the nucleus is found, that the stone had a fixed position in the bladder, always resting upon the part placed lowest in the figure, and that the fresh accretion, composed of the fusible calculus with much animal matter, took place upon the surface open to the urine. From such instances are we not to infer, that, if a stone be fixed, resting uniformly upon one part of its surface, or if it be adherent, or in part contained in a sacculus, that it will increase chiefly or entirely in the aspect which is free to the access of urine? What I state may prove sufficient to direct the attention of surgeons and pathologists to this interesting point.

A patient, in whose bladder a stone had been distinctly felt, assented to undergo cystotomy for its removal; but when a very valued friend of mine[4] went to a distance to perform the operation, no stone could be found on sounding; the disease was notwithstanding present, and the patient was worn down by his sufferings, after a year or two more had elapsed. Two calculi were found in his bladder; the smaller one, composed principally of lithic acid, and weighing two scruples, was loose, and presented a regular shape, (plate i, fig. 9, a.) The larger stone (b) has a nucleus of lithic acid of a similar shape to the smaller moveable stone, which nucleus is situated so as to project upon the surface (d,) whilst a very bulky deposit of the fusible kind, mixed with much animal matter, has taken place in one direction and not all around the nucleus. To afford an explanation of such a partial deposit, we must suppose, that the small flat calculus of dark colour became caught and firmly held by the muscular fibres of the bladder, which organ being in a very morbid state, the fusible calculus was quickly deposited upon the surface of the nucleus exposed to the urine.

If it be admitted that a stone cannot increase at the part of its surface where it is fixed, or sacculated, or kept in close contact with the coats of the bladder, it will follow, that, where we find on a section that a stone has increased by fresh deposit in a particular direction, it was not fixed or adherent to the bladder at such points. A very able surgeon removed, some years ago, from a boy fifteen years old, and by the high operation, a calculus weighing ℥j ℈iss, as represented in fig. 8

[4] The late Dr. Rigby.

of plate i, and the operator thought it adhered at each end; but on a section we find that the calculus increased at each end by fresh deposit of fusible matter, proving it did not adhere at either of those points. From inspecting the section, I deemed it not unlikely that the smaller end (a) answered to the urethra, and increased so as to extend into this passage, in which situation a fresh deposit might be made rapidly, because all the urine must pass over it; and that the greater end (b) answered to the fundus of the bladder. The lad, from whom this calculus was removed, suffered from most dreadfully severe symptoms; his bladder was very morbid, and closely contracted upon the stone, which, being placed as I have supposed, with one end entering the urethra, would be *fixed*, but not *adherent*,—a distinction necessary to be made, though not usually attended to. Stones may be fixed by extending into the urethra or ureters, or by being grasped by the muscular fibres of the bladder, or contained partially in a sacculus, and nevertheless be in no degree adherent; indeed my extensive investigations into this part of pathology have brought me no experience of a calculus actually adherent to the coats of the bladder, except by a layer of intervening lymph, soft enough to be easily broken through. I am hence tempted to conclude that the numerous instances we read of, where calculi are said to have been found adherent in the operation, accounting for the difficulty in the extraction, have either presented nothing uncommon, or the calculus has been fixed in one of the several ways stated, and not actually adhered to the lining of the bladder.

CHAPTER IV.

OF CALCULI IN THE KIDNEYS AND URETERS, AND THEIR PATHOLOGICAL EFFECTS.

SEVERAL writers mention having found gravel or small crystals of lithic acid in the tubuli uriniferi[1] of the kidney; considering the frequency of this form of urinary deposit, such a pathological state is rarely demonstrated; of the many dissections I have made, always taking care to inspect the kidneys, I have in not more than two or three instances found red gravel so situated. The following I believe to be the first instance in which a concretion of a different composition has been ascertained to be present in the tubuli.

An elderly man was treated for rheumatism and lumbago in a public institution,[2] where he lost appetite, had a diminished secretion of urine, a parched brown tongue, and died in a few weeks. A calculus was found in the left ureter, seven inches from the kidney, completely preventing the passage of urine through that channel into the bladder, and inducing enlargement of the ureter above it, (plate viii, fig. 1,) as well as of the pelvic cavity, which was filled with fœtid, muco-

[1] See *Le Dran's Operations of Surgery, by Gataker; Edinburgh Medical Essays*, vol. i; *Earle in Medico-Chirurgical Transactions*, vol. xi, pp. 215, 228. Under the article *Gravelle*, of the *Dictionnaire des Sciences Medicales*, tom. xix, p. 332, the following remarks occur in relation to the situation of calculi in the kidneys: "C'est ordinairement dans les calices, ou dans le bassinet des reins qu'on les trouve; on voit rarement des grains calculeux ou graviers dans la substance corticale ou extérieure de ces organes; on en trouve quelquefois dans leur substance tubuleuse et mamelonnée; il parait même que c'est dans cette dernière substance que la matière lithique se cristallise; car en pressant entre les doigts les mamelons des reins calculeux, *on en exprime ordinairement des cristaux, des petits grains pierreux.*"—Mr. Wilson (*Lectures on the Urinary Organs*, p. 213,) states that he has seen small granules of lithic acid in the cortical portion.

[2] The Norfolk and Norwich Hospital, by my colleague, Dr. Evans.

purulent fluid; the lining membrane of this cavity was thickened and morbidly vascular. The right kidney was of small size, but normal in exterior shape and in the condition of its pelvic and infundibular cavities. The parenchyma being cut through in different directions, the tubular part was found occupied by numerous white concretions, varying from the size of the smallest seeds to that of a large pin's head; these bodies were distributed over all parts of the substance of the kidney except the cortical portion; on more minute investigation, I found them to be pure oxalate of lime, crystallized, transparent, and situated in the tubuli uriniferi. I cut thin slices of the organ, dried them, and placed them afterwards in spirit of turpentine, which exhibited the small concretions of oxalate of lime distinctly; but no drawing will convey any adequate representation of them; one of the largest slices was prepared by drying, and before it was quite dry, I cut down to the calcareous mass, and thus opened one of the tubuli and exposed a beautifully crystallized salt of oxalate of lime, and in this state it is now preserved in my cabinet.

In no other instance do I know of oxalate of lime being found in the tubuli. This urinary concretion varies more than any other in colour and appearance; in the minds of most pathologists it is associated with the form of a mulberry, but it takes this shape only occasionally, and when accumulated in a considerable mass: the most smooth and polished of all calculi, called the hempseed, is composed of oxalate of lime; and the purest state in which this compound is found, as an urinary concretion, is a white transparent crystallized mass, such as occupies the tubuli in the specimen just described. The rat, as has been observed by some[3] author, is subject to calculi; and in several examples of concretions found in the bladder of this animal, by a very intelligent gentleman,[4] residing near me, they were composed of pure oxalate of lime.

Renal calculi are most commonly formed and are met with on dissection, in the infundibular or pelvic cavities of the kidney; and in order to convey an accu-

[3] Morand has said that calculi are often met with in the kidney of the rat. See *Med. and Chir. Review*, vol. xii, p 49.

[4] Mr. Griffin, formerly apothecary to the Norfolk and Norwich Hospital.

rate idea of the different situations of such calculi, and the changes those cavities undergo in shape in consequence of their presence, it may be necessary to refer to the organ in its healthy state. Plate iii, fig. 1, represents a longitudinal and central section of the healthy kidney, minutely injected with size and vermilion, shewing the division of its parenchymatous or solid substance into (b) the cortical part, and (c) the tubular part and mammary processes; it also exhibits the size and shape of several infundibula (e, f, g, h,) which are largest at the mammary processes, and often contract so as not to be one eighth of an inch in diameter, before they open into (d) the pelvis, a cavity of small extent in the healthy organ.

The membrane lining the pelvis, ureter, and infundibula, and which likewise covers the mammary processes, leaving openings answering to the orifices of the tubuli uriniferi, must be very dilatable, like the lining of the urinary bladder, in order to admit of the great changes in shape and increase of size, which I shall demonstrate to take place, when calculi occupying some part of the urinary passages, give rise to difficulty in the transit of the urine.

In an aged patient, who had for many years laboured under stone in the bladder, consequent upon a very enlarged prostate gland, and who died from the effects of these two diseases, when he had attained above the age of seventy years, I found in one kidney a calculus, situated next the tubular part, as represented in fig. 2 of plate iii, at the larger end of one of the infundibula, which was not sufficiently large to allow the calculus to get into the proper pelvic cavity; the calculus was in contact with one of the mammary processes, which had been partly absorbed to make room for its increase. In the cortical part of the kidney, there were several spurious hydatids, which are found in almost every patient who has long laboured under dysury, from whatever cause arising.

Seeing the narrowness of some of the infundibula before they open into the pelvic cavity, and that calculi do form and increase to a considerable size, (as I have found in other instances besides the preceding,) in the largest part of the infundibula, next the mammary processes, or what has been called the calyx, it appears to me that a nephritic attack, with violent pain, vomiting and such other symptoms as attend the passage of a calculus along the ureters, may occur from its passing

through the narrow part of one of the infundibula to reach the pelvic cavity. In a patient who suffered from nephritic attacks, the pain occupying the loins and not extending along the ureters, I found on dissection numerous small calculi in the calyces, some in the pelvis, and the infundibula so narrow at one part, that the calculi in the latter situation must have passed with difficulty from the calyx. In a nephritic attack of this sort, one infundibular passage only out of several is obstructed, and the excretion of urine may continue, the others offering a passage for it into the pelvis: still we do not find a calculus fixed in the narrow part of an infundibulum, which I suppose is owing to the cavity so readily enlarging, and allowing the foreign body to reach the pelvis, where we most usually meet with it.

In an elderly maiden lady, who died from a rupture of the left ventricle of the heart, and who was not known to have suffered any severe nephritic attacks requiring medical aid, I found a large calculus infixed in the proper pelvic cavity of one kidney, as represented in fig. 3, plate iii. Although great pain in the loins, no great difficulty in the passage of the urine had been complained of; but the pressure from obstruction to the course of the urine had been sufficient to lead to irregular enlargement of several of the infundibula, and to absorption of the mammary processes and even of nearly the entire thickness of the parenchyma at one or two points, until the corresponding infundibular cavity came near to the outer surface or membranous capsule of the kidney.

A man aged sixty-four, following the occupation of a dyer, complained for years of a pain in his loins reaching as high as the scapulæ, but was otherwise stout, strong, and healthy, and kept to his regular labor, until he was suddenly seized with more severe pain, attended by very obstinate vomiting; this latter symptom persisted for several weeks, at the expiration of which time, and after an entire suppression of the urinary secretion for five days, he died. On dissection I found the left kidney of great size, weighing when deprived of all adipose substance, above twelve ounces, and in the pelvic cavity, there was a large calculus, of the size represented in plate iv, fig. 1. The infundibula were deepened, but not greatly increased in size; and there were evidences of inflammation of the kidney and of the lining membrane of the pelvis, which I presume was the cause of the complete

suppression of urine and of death; for this was the only kidney the patient had for performing the function of this emunctory, no other trace remaining of the right kidney than a lobulated bladder, filled with an opake dirty fluid. On inspection I found that the whole of the parenchymatous substance of the right kidney had been absorbed, the common lining of the pelvis and infundibula being brought into contact with the external capsular covering, in consequence of a small black calculus obstructing completely the ureter very near its commencement. I inserted a blow-pipe into the emulgent vein, and carried it through the sides of the bag into its cavity, and having drawn off the contained fluid, and inflated the bag, as we do a common bladder, I dried it and obtained the specimen represented in fig. 2 of plate iv.

I have observed, and indeed every pathologist knows, that although a considerable part of the parenchymatous substance of the kidney be absorbed, and the infundibula obliterated by extension of the pelvic cavity, urine will be secreted, even when a very thin layer only of the glandular substance remains. It is not easy to ascertain when a kidney, thus deformed and diminished, loses the power to secrete urine; but I think it may be stated that the mere membranous capsule or bladder, represented in plate iv, fig. 2, could not secrete, and if it could, no passage was left for the urine to reach the bladder; the other kidney, which we find so very large, had double duty to perform, and underwent a corresponding increase of bulk; the large calculus occupying the pelvis did not prevent the urine secreted from passing into the bladder.

One ureter may be completely obstructed and the function of the kidney connected with it destroyed, without danger to the patient, or other inconvenience than pain; but if the other ureter become obstructed in like manner, the patient inevitably dies in six or seven days; I have met with instances confirming this, where I had convinced myself by the symptoms that one ureter was permanently obstructed and one kidney only left to secrete urine.

That absorption of the parenchymatous substance of the kidney may arise from pressure of the retained urinary excretion, we have numerous and daily proofs; the dysury arising either from a calculus in the bladder, an enlarged prostate, or

stricture of the urethra, affords examples, and plates eight, ten, fifteen, and twenty, shew the effects produced; but where the obstruction of the ureter is complete, as in plate viii, fig. 1, and plate iv, fig. 2, absorption of the gland will, we may presume, ensue from a cessation of its function, as we see other organs wasting when they are become superfluous and have no office to perform. Absorption of a secreting organ may also happen from atrophy, or want of a supply of arterial blood, as where the arteries are diseased or obstructed; when this occurs in the kidney, the cavities are not enlarged, but a diminution of the whole gland takes place. In a man who presented one kidney healthy, though of large size, there was no trace of the other beyond the small bag, represented in fig. 3 of plate viii, which atrophied state of the organ I attributed to the extreme ossification of the emulgent artery.

The expansion of the pelvic and infundibular cavities of the kidney into one large bag, in which all trace of the original form is nearly obliterated, may be comparatively explained by a glove of indian-rubber, in which the part covering the wrist would answer to the ureter, that upon the palm of the hand to the pelvis, the fingers to the infundibula, and the tips of the fingers to the situation of the calyces; by inflating and enlarging this glove powerfully enough, the fingers would become obliterated and the whole expanded into one large cavity; precisely what happens to the dilatable and elastic membrane of the cavities of the kidney; and the comparison is not weakened by the infundibula being about twice as numerous as the fingers of the elastic glove.

The evils produced by renal calculi are not to be measured by their size; a small passable calculus, in its course along the ureter, causes most severe and acute symptoms, which every practitioner is familiar with; a calculus firmly impacted in and filling the ureter, sometimes gives little pain, although leading to complete destruction of the renal organ; whilst a large calculus occupying the pelvis, and allowing the urine, as it is secreted, to pass on towards the bladder, with much pain brings no immediate danger, and may remain for many years, increasing sometimes to so great a size that the parenchyma is absorbed to make room for it; and when the calculus is not very large, by keeping up irritation and an in-

creased flow of arterial blood to the organ, it often leads to an augmentation of its glandular substance. A considerable calculus in the pelvis brings less danger of obstruction to the passage of urine, than of acute inflammation, which arising in one kidney, often affects both and creates fatal suppression of the urinary excretion; in the absence of acute inflammation, a calculus in the pelvis creates a dull heavy pain in the loins, extending sometimes to the scapulæ, at others over the buttocks or to the groins and scrotum, and along the thighs; bloody urine after exercise; dysury and frequent micturition as if there were a stone in the bladder; and by chronic inflammation of the membrane lining the cavities of the kidney, an abundant catarrhal or muco-purulent secretion is formed, which appears with the evacuated urine.

In general one kidney is principally affected, the other being nearly or quite healthy; and we often find that when the urine is clear the patient has most pain, and expresses himself to feel easy when there is a plentiful mucous secretion with the urine; in the former case, the ureter of the affected kidney is temporarily obstructed and clear urine from the other organ, which is healthy, alone reaches the bladder. This state of ease when the urine is turbid, and encreased pain when it flows clear, often attends disease of one kidney, unconnected with a calculus; but a marked succession of symptoms after the above order, always points out one kidney to be diseased and its ureter occasionally obstructed.

A labouring blacksmith, about fifty years of age, had often passed calculous concretions by the urethra, which were traced from the kidney and composed of lithic acid. For some weeks before applying to me, he complained of pain in the region of the left kidney, with frequent and painful micturition; he had for some time previously passed turbid urine, but for three or four days before I was called to attend him, the urine was clear, limpid, pale and in small quantity. I was summoned on account of sudden urgent symptoms, and found him dull in manner, though hurried, with a full pulse, large abdomen, flushed face, quick laboured breathing, brown and parched tongue, hiccough. His principal pain was in the region of the left kidney, extending along the course of the ureter towards the bladder. Blister, fomentations, and purging physic had been tried before I arrived.

I recognized the signs of a calculus plugging up the left ureter, and inducing serious inflammation there, with suppression of the urinary secretion. Only twelve ounces of clear urine were passed in twenty-four hours. Local bleedings, opiates, local and general warm baths, failed to arrest the symptoms. At the end of three days, the patient was in much the same state, only with a pulse more feeble, and tongue more brown and parched; hiccough continued, and coma supervened. The urinary secretion ceased—he lay as if in a deep sleep, with stertorous breathing and dilated pupils—and in five days, expired. The disease was limited to the left kidney, which was buried in a great quantity of adipose substance, and was of large size, having the lining membrane of pelvis much inflamed, as exhibited in plate vi, and a calculus completely obstructing the ureter, two inches from its commencement. The other kidney was much smaller, without any diseased appearance; its secretion, we must therefore conclude, had been stopped from sympathy with the affected kidney, as we do often find where one kidney only is inflamed. An examination of the head was not permitted, but the symptoms sufficiently explained that the diminished excretion of urine led to effusion upon the brain, causing the fatal issue; and all these evils resulted from a calculus escaping from the pelvis and suddenly obstructing the ureter.

In the following case death ensued from a different cause, suppuration and gangrene about the kidney, in consequence of a small calculus inducing inflammation. The patient was a florid and corpulent gentleman, about sixty years of age; for some months he had suffered from what was considered rheumatism about the loins, thighs, and knees. Twice after riding on horseback he was seized with urgent pain in the right kidney, attended by vomiting, and proving so severe as to cause him to scream out; the second of these attacks was accompanied by obstinate constipation, with a scanty evacuation of very turbid urine. Various purges, amongst them castor oil, failed to act on the bowels; bleeding, cupping, fomentations, and warm baths were in succession tried. The pulse were only sixty in a minute, and the pain and tenderness on pressure were limited to the region of the affected kidney; the abdomen, though full and prominent, was not tender. The urine became, after an early period of the attack, quite clear, only half an ounce

being voided at a time, and not above six ounces in twenty-four hours. Spontaneous diarrhæa now supervened and the pulse intermitted; stimuli were given to support the fast failing strength of the patient, and opiates to obtain ease; the surface of the body became very cold, notwithstanding the warmth of summer weather, and immersion in a hot bath; six days from the first attack, when rising to get out of bed, he fell back and expired, remaining sensible and collected to the last. The morbid appearances were limited to the left kidney, the ureter of which was closed by a small calculus, two inches from its commencement. The lining membrane of the pelvis and infundibula was greatly inflamed, and half an ounce of fœtid turbid urine was contained in these cavities. Near the pelvis of this kidney, there was a quantity of pus in the adipose substance, a portion of which around the abscess was gangrenous (see plate iii, fig. 4.)

These are a few amongst the many instances that might be selected from my case-book to shew the fatal effects of calculi suddenly obstructing the ureters, and the different ways in which those effects are produced. The series of drawings represent the ureters obstructed by calculi in different situations between the kidney and bladder, and some of the cases to which they refer require no more to be said than what will be found in the annexed explanations (plates v, vii, and viii.)

One of these (plate vii) refers to a young woman, only seventeen years of age, who hung herself in a fit of despondency; she was apparently well, and actively employed in service, until her death; yet the kidneys presented great changes, and were as unlike a pair as if they had belonged to different animals. The left kidney (fig. 1) was small and diminished, with very little parenchymatous substance, and with enlarged pelvic and infundibular cavities, in consequence of a large oxalate of lime calculus, lodging in and completely obstructing the ureter, about midway between the kidney and the bladder (i, fig. 2.) The other kidney (fig. 3) was of immense size, and of healthy shape and structure. The remarkable thickening of the coats, principally the outer, of the left ureter, from its origin down to the calculus, and its very small cavity, which must have contracted after allowing the calculus to pass, are circumstances well represented in fig. 2.

I have been surprised to find how rarely, under extreme disease and profuse

muco-purulent excretion, is the lining membrane of the pelvis and infundibula ulcerated; such a state occurs from scrofulous disease of the kidney, but rarely as a consequence of urinary concretions; when from their presence abscesses arise, these are situated in the surrounding adipose substance, and may burst into the pelvic cavity of the kidney, or into the peritonæal cavity, or into the contiguous part of the colon, or may make their way circuitously to the surface of the loins;[5] sometimes the matter, besides bursting in one of the two last directions, also forms an opening into the pelvic cavity of the kidney, from which calculi may escape into the colon or outwardly upon the loins; numerous instances of the latter state of disease have been related, rendering it superfluous to pursue the subject by fresh cases of the kind.

[5] Howship (*Observations on Diseases of the Urinary Organs*, p. 42) details cases of abscesses thus formed bursting into the peritonæal cavity; also an abscess of the kidney opening externally between the two lowest ribs. Morand (*Opuscules de Chirurgie*) mentions just such an instance. See also *Medical Facts*, vol. vii, p. 285. *Petit, Œuvres Posthumes*, tom. iii, pp. 73, 79. *Sir A. Cooper's Surgical Lectures, by Tyrrell*, vol. iii, p. 226.

CHAPTER V.

ON URINARY CALCULI SITUATED IN THE URETHRA, AND ON CALCULOUS CONCRETIONS IN THE PROSTATE GLAND.

It has repeatedly happened that a calculus has just quitted the bladder and become fixed in the commencement of the urethra, increasing there in process of time to a considerable magnitude, so as to lodge partly in the prostatic portion of the urethra and partly in the bladder. A stone thus placed creates great pain, and is usually accompanied by constant stillicidium; it is easily felt with the sound, but this instrument meets with great obstruction when an attempt is made to introduce it into the bladder; indeed, if there have long been stillicidium, this viscus becomes so much contracted, that there is hardly a vesical cavity remaining to receive the end of the sound. The surgeon may recognize such a position of the stone not alone by the symptoms enumerated, but by the sound coming in contact with it before being passed deep enough to enter the bladder; and if the stone occupying the prostatic urethra be large, it can be felt by the finger introduced *per anum*. It is highly expedient that an operator should know when a stone occupies this peculiar situation, as he will meet with great embarrassment from proceeding, in such a case, under the idea that he is about to remove a loose stone from the cavity of the bladder. A very experienced lithotomist refused to operate upon a patient aged sixty-six years, on account of the bad state of his health, and the morbid condition of his bladder as indicated by the abundant muco-purulent discharge voided with the urine; but without detecting or suspecting any peculiarity in the situation of the stone. After this advice was given, the patient lingered in great misery between two and three years. I obtained his bladder, which exhibited the appearances represented in plate ix, fig. 1. A large calculus (plate ii, fig. 3)

occupied the neck of the bladder and prostatic part of urethra, which were become one uniform cavity, the prostate gland being absorbed, and the fundus of the bladder contracted so as to present a cavity not bigger than a small nut-shell. The ureters and vasa deferentia opened into the cavity occupied by the stone, defining its situation to be as I have stated. Had an examination during life been made *per anum*, the stone would have been felt by the finger just within the sphincter, and might readily have been removed in that direction; but I do not advise such a proceeding, fearing a recto-urethral fistula will remain afterwards; I believe it is best to remove a calculus thus placed, by a lateral incision in the perinæum, where a staff can be introduced into the bladder; or by cutting upon the gripe, where it cannot.[1]

A lad, aged eighteen years, had suffered symptoms of stone in the bladder for more than half his lifetime, and when a surgeon sounded him with a view to cystotomy, he found some peculiar circumstances, the sound meeting the stone early, and when fully introduced not striking fairly against it in the bladder, as is usual. For several years there had been stillicidium urinæ. Another surgeon of greater experience sounded the patient and said the bladder was filled with a large calculus, for the sound touched it in every direction; this was indeed the fact, but the inference as to a large calculus filling the bladder was wrong. Previous to an

[1] In "*Essays and Obs. Physical and Literary*," published by the *Philosophical Society of Edinburgh*, vol. iii, p. 546, Dr. Livington has related two cases of vesico-urethral calculus; in one the calculus was found *post mortem*, in the other he operated by cutting on the gripe. The difficulties attending such an operation, where you propose to operate, and cannot get a staff into the bladder, are shewn in *Medical Facts*, vol. viii, p. 126; also in an interesting case by Cheston of Gloucester, related in the *Medical Records and Researches*, vol. i, p. 163. Under complete retention of urine, with a stone thus lodged, or a small stone impacted in the commencement of the urethra, the surgeon, being unable to get either catheter or staff into the bladder, may be compelled to cut into the urethra, at its membranous part, and to incise the neck of the bladder, in order to give outlet to the urine, and at the same time to remove the calculus. I have met with examples of such practice being required. Deschamp removed a calculus, situated in prostatic urethra and causing complete retention, by an incision as in the lateral operation of cystotomy, (*Traité de la Taille*, tom. iv.) Sabatier (*Méd. Opératoire*, tom. iii, p. 136) observes that the Celsian method is preferable to all others, when the stone, having lodged at the neck of the bladder, has gone on increasing, so as to extend into the urethra and become prominent in the perinæum; and Dionis (*Operations de Chirurgie par La Faye*, p. 221) previously made the very same remark.

operation being undertaken, I had the opportunity of examining the patient, and found that the sound, on being introduced, came very soon in contact with the stone, before it could have gone deep enough to reach the bladder. With the finger *in ano*, I could feel the stone, as big as a pigeon's egg, through the coats of the rectum, immediately within the verge of the anus, and no prostate gland could be detected. The sound having passed behind the stone, I could feel it readily, with my finger *in ano*. Examining still more minutely by passing my finger along the perinæum, verge of the anus, and anterior wall of the rectum, till it had arrived in the bowel beyond the stone, I found no prostate gland, a proof that the stone was not in the bladder, but partly or entirely in the urethra. If any prostate gland remained, it was situated higher up than my finger would reach, and beyond the stone; in all probability this gland had become absorbed from pressure of the stone and obliteration of its ducts.

The operator employed the common curved staff, and proceeded as if cutting for a loose stone in the bladder, but when he took the gorget, it would not pass on; still the stone was accessible to the touch, being situated at a depth of not more than an inch and half from the external wound; now the forceps were tried, but they would not pass into the bladder, neither could their blades be opened so as to grasp the stone; some talked of pushing the stone back into the bladder, before applying the forceps to it, but this could not have been easily done, even supposing there were a bladder large enough to receive it. After many rough attempts, which failed because ill directed on account of the case not being understood, the stone was turned out of its lodgement with the scoop and found to weigh six drachms.

I thought that in such a case, if the curved staff be used at all, it should be passed on the pubic or anterior aspect of the stone; if it be passed posteriorly or on the rectal aspect, there is great danger of wounding the rectum. By a free external incision, carried down to the stone, in the usual situation of the lateral operation, and by the scoop passed in on the pubic side, with the finger *in ano*, the surgeon may, if well acquainted with the situation of the stone, and assured of its not extending into the bladder, remove it with ease, expedition, and safety.

Some days after the operation, in the above case, the fœces passed through the perinæal wound, proving the rectum to have been injured; but in seven weeks the wound was healed, and the patient recovered, retaining his urine well and voiding it regularly. After an interval of nine months from the first operation, this young man returned, with a calculus as large as a pigeon's egg in the urethra. The staff came in contact with the stone just beyond the bulb of the urethra, and passing behind it, entered the rectum by a fistulous opening. When the urine was voided, more passed by the rectum than by the penis; and when the bowels were relaxed, a little fœces got into the urethra and was voided by the penis with the urine.

An incision being made after the manner of the lateral operation, this second stone was readily removed, by a more able operator[2] than on the first occasion, and it weighed half an ounce. The perinæal wound healed in three weeks; but the patient remained afflicted with the recto-urethral fistula, and was again troubled with urinary concretions, several of which passed into the rectum and so escaped, the opening between the urethra and rectum being large enough to receive the end of the finger. The patient coming under my care, I made an unsuccessful attempt, some time afterwards, to close the recto-urethral fistula by suture, the particulars of which procedure it is not in order here to detail.

When a stone occupies the prostatic or membranous portion of the urethra, without extending into the neck of the bladder, it usually creates less urgent symptoms, and may remain there for many years without seriously affecting the health. About eight years ago, I attended in consultation upon a patient aged about fifty, on account of sudden retention of urine, and with the finger *in ano* I felt a calculus, of the size of a healthy prostate gland, situated in the membranous and prostatic part of the urethra; the patient would not submit to any operation for the removal of the stone, and is now living and in pretty good health, having suffered only from occasional retention of urine or from a frequent call to evacuate it. In other similar instances I have known so little suffered, that the removal of

[2] The late Mr. Martineau, whilst senior surgeon to the Norfolk and Norwich Hospital.

the stone seemed not to be demanded. I am now attending a gentleman where a stone is thus situated, but as the bladder is diseased and the kidney contains a calculus, with a bad state of health that forbids all interference, I allow the stone in the urethra, a minor evil, to remain.

Sometimes, however, a stone in the membranous or prostatic portion of the urethra will produce very serious effects. A man, thirty-six years of age, and very intemperate, had laboured under severe stricture six or seven years, and fell under my care in the last stage of his complaint, greatly emaciated, with constant stillicidium, urine muco-purulent and fœtid, great pain in the loins. The stricture could not be surmounted; the patient was not in a state to undergo any operation, and in forty-eight hours he died, from causes sufficiently explained on dissection. The stricture (plate x, fig. 1) was situated just behind the bulb, and was so narrow that a bristle only would pass through it. Immediately behind the stricture, in the membranous part of the urethra, is a calculus three quarters of an inch in diameter; the prostatic part of urethra behind the calculus, and the neck of the bladder, are greatly dilated, and form one continuous cavity. The bladder is of large size; its lining membrane much inflamed; and two small calculi (fig. 2 and 3) were in its cavity, imbedded in folds of the membrane, and held by fibres of the muscular coat, near the neck of the bladder. The enlargement of the ureters, (particularly of the right, which looks like a distended intestine,) with increased size of the pelvis of each kidney and expansion of the infundibula, are all well exhibited in the drawing; all these urinary cavities, situated posterior to the stricture, were occupied by foul urine mixed with pus, and at the fundus of the bladder suppuration had taken place in its coats, and the walls of the abscess were gangrenous.

When a calculus of considerable size is situated in the membranous part of the urethra, immediately behind the bulb, if the finger *in ano* can be carried beyond it, so as to press it forward in the perinæum, it may be removed by a semilunar incision, as in cutting on the gripe; indeed if there be an insurmountable stricture anterior to the calculus, you can scarcely adopt any other operative proceeding.

Calculi lodged in the urethra, even of large size, are sometimes not discovered

with the sound or catheter,[3] which it seems difficult to explain, unless we suppose that the operator, thinking only of the bladder, neglects the slighter impression conveyed by the stone in the urethra; it may however happen that the muscles about the urethra, embracing firmly the instrument, prevent its touching the calculus, which is generally lodged in a depression or cavity, formed by it and answering to its size.

Large calculi lodging in the membranous portion of the urethra sometimes work a spontaneous cure by finding an exit at the perinæum, the soft parts ulcerating or sloughing, or abscesses forming so as to let the calculi into their cavities.[4] A

[3] I recollect examining a preparation, in the excellent pathological collection of Mr. Langstaff, taken from a boy, who had been sounded by several surgeons of great experience without a stone being detected, although one of considerable size lodged in the urethra; in such cases, the stone may always be felt by examining with the finger, either *per anum* or in the perinæum. Deschamps, in the work just quoted, tom. iv, p. 195, notices having met with a stone in the membranous part of the urethra, as big as a nut, which he could not detect with the sound, although he could feel it with the finger *in ano*; he removed it by making a perinæal incision.

[4] Petit (*Œuvres Chirurgicales*, tom. 3, p. 14) may be consulted for cases of stone in the urethra escaping externally by an opening in the perinæum. A large calculus, occupying the membranous part of the urethra, immediately behind the bulb, is so favourably situated for removal, that it is in such a case, particularly if the patient have previously undergone litho-cystotomy and suffered a relapse of his disease, that he can readily operate upon himself, as has in many instances been done. Tulpius (*Observationes Medicæ*, p. 324) relates that a courageous man thus operated upon himself a third time, with a knife only, without forceps removing a stone weighing four ounces; and in Covillard, (*Observat. Iatro-chirurgiques*, p. 100,) we read of a stone pressing in the situation of the perinæal cicatrix after lithotomy, which the patient relieved himself of by a simple incision. In the more recent case of auto-lithotomy several times repeated by M. Clever, the stone must each time have presented itself in the perinæum under similar circumstances. A lad, nine years of age, had been twice lithotomized, and six years after the second operation, a calculus passed away through an opening formed by sloughing of the scrotum and perinæum, weighing eight ounces and measuring nearly six inches in length, furnishing one of the most singular specimens I have ever seen; Sandifort relates some particulars of the case, (*Observ. Anat.-Pathologicæ*, lib. iv, p. 130,) and gives a drawing of the calculus, which is still preserved in the Anatomical Museum at Leyden and shewn to all travellers. Sir A. Cooper (*Lectures by Tyrrell*, vol. 2, p. 264) states that, in a boy he made an incision *in perinæo* between the bladder and rectum, down to a stone, situated in a sac communicating with the bladder, and the urine took its natural course after three days; this is cutting much deeper than for an urethral calculus situated at the neck of the bladder, but the case is not related with such precision and detail, as to determine with certainty its nature or direct our practice: may it not have been one of those instances, of which there are many on record, where a calculus, arrested at the termination of the ureters, just before reaching the bladder, drops down between the coats of this viscus, and reaches a situation

boy, aged seventeen, after suffering for above ten years from very painful symptoms, and having abscesses and fistulous openings in the perinæum, got rid of a calculus in this direction, weighing two ounces and a quarter and measuring nearly four inches in length; it is now in my collection; the boy lived two years afterwards, voiding other smaller calculi by the wound, which never healed.

Sometimes calculi in the urethra, quitting that passage by ulceration or otherwise, and getting into the cellular tissue under the integuments, descend into the scrotum, and still maintaining a channel of communication with the urethra, so that the urine gets access to them, they increase to an immense size; I am acquainted with a case where a calculus weighing eight ounces was removed from the scrotum of a man thirty-six years of age,[5] and which I conjecture to have been formed in the above manner. The removal of such concretions is a very easy and safe operation; they are probably always composed externally of the phosphates, and if the explanation I give be correct, the cavity in which the stone is lodged will be found to communicate by a fistulous channel with some part of the urethra.

The treatment of cases of small and passable calculi in the urethra, is so well described in books, and so generally understood, that I shall subjoin only a single case in reference to the subject.

A practitioner called me to a little boy, whom he stated to have been attacked three days before, with inflammation of the scrotum of so violent a kind, as to end

towards its neck, between it and the rectum, lodging in a sac still communicating with the ureter and receiving the urine. Delpech (*Maladies Reputées Chirurgicales*, tom. 2, p. 207) proposes to call all such calculi, situated out of the course of the natural passages for the urine, not encysted but misplaced, (*pierres égarées.*)

[5] This concretion is preserved in the Cabinet of Urinary Calculi at the Norfolk and Norwich Hospital, and is referred to in Appendix ii, Table 1. "A shoemaker had, for twenty years, a stone in the scrotum, which he supported in a bag; at length it got to such a bulk, that, during exertion at stool, it ruptured the scrotum and escaped: it weighed twenty-six ounces. The wound contracted and with surgical assistance healed." *Gräfe ueber Scrotal Steine, in Gräfe und Walther's Journal*, lib. iii, § 399. The scrotum is liable to diseased action by which it increases and becomes converted into a calcareous substance, independent of the urinary excretion; such a case, successfully treated by operation, is recorded by Dr. Valentine Mott in the *Philadelphia Journal of the Medical Sciences, for August*, 1827, and copied into the *Lond. Med. Phys. Journal*, vol. l, p. 516, and *Lond. Med. Repository*, vol. xxviii, p. 531.

soon in gangrene. Leeches and cold lotions had been applied; I found the scrotum very much enlarged and actually gangrenous. The child had passed no water since the commencement of the attack, and on examination I discovered a calculus lodged just within, and compeltely obstructing the external orifice of the urethra; I cut out the calculus immediately and urine abundantly flowed; but the relief was afforded too late, the little patient dying in thirty-six hours, from the effects of a bursten urethra, infiltration of urine into the scrotum, and extensive sloughing, all of which evils might readily have been prevented, by a small incision into the urethra, liberating the calculus. I took out the urinary organs entire, and they are represented in plate ix, fig. 3. The bursten part of the urethra answers to the anterior part of the scrotum; the bladder hangs flaccid, though its cavity is large; the ureter and pelvis of each kidney are greatly distended and increased, from pressure of the retained urine.

Urinary calculi situated in the prostatic part of the urethra, as has been just described, are seldom formed there, but descend from the kidney or bladder, and may be composed of any of the varieties of urinary calculi found in these organs. Prostatic calculi, on the contrary, are formed in the ducts of the prostate gland, deposited from its natural or disordered secretion, and composed uniformly of phosphate of lime.

In plate xi, fig. 1, several small calculi, the size of pins' heads and of a brown colour, are observed in the substance of the gland, communicating with ducts that open at some distance, upon the surface of the urethra. It is only in this early stage that their true origin and situation, in the excretory ducts, can be demonstrated; for the urethral orifice of the ducts may close, or the cavities ulcerate, or enlarge as the concretion enlarges, until an extensive membranous cyst is formed, the substance of the gland being absorbed. When small and thus imbedded in the ducts, prostatic concretions cause none of the characteristic symptoms of urinary calculi and cannot be detected; it is only when they increase and rise so as to project at the orifices of the prostatic ducts, or escape, as they may do, into the urethra, that they can be discovered by the sound: but when of large size, or when

numerous and contained in one cyst, they can be detected by the finger pressing upon the prostate gland through the rectum.[6]

In plate xi, fig. 2, numerous calculi are brought into view, situated in the substance of the prostate gland, which is cut through in different directions; some project at the orifices of the ducts in the urethra and would give an obscure impression to the sound or catheter; one large concretion, half an inch in length, is contained in a cyst at the posterior and lateral part of the gland, and could be distinctly felt by the finger *in ano*. The bladder is large and sacculated, indicating the severe degree of dysury which the prostatic calculi occasioned.

It is only when large, or numerous in one large cyst, or projecting into the urethra, that prostatic concretions give rise to the symptoms of stone, frequent, painful micturition, and discharge of mucus from inflammation of the urethra and neck of the bladder; they seem to be sufficiently often combined with stone in the bladder, to lead us to suspect that the one disease contributes to the arising of the other; and indeed I consider that urinary calculi, stricture of urethra, or whatever other diseases, here situated, cause inflammation of the prostatic part of the urethra, interrupting the free exit of the excretion of the prostatic ducts, dispose to the formation of calculi of this description. When severe symptoms are produced by prostatic calculi, dysury, stricture, sacculi and inflammation of the bladder, all ensue; and in extreme cases, where a large prostatic calculus, or a cyst containing numerous small ones, is discovered, it may be right to cut down to

[6] Concretions in the prostate gland, commencing in its ducts, often at a distance from their urethral orifice, even at the very bottom of a duct, go on increasing until each duct is enlarged into a pouch, rendering an escape of the concretion into the urethra, through the narrow orifice of the duct, impossible; the narrow orifice by which the pouch communicates with the urethra becomes often closed in consequence of inflammation and effusion of lymph; the pouch is a secreting cavity, which furnishes additional deposit; and as the concretions enlarge or multiply, the pouch enlarges in the direction where there is least resistance, towards the lateral or posterior surface of the prostate gland; thus, in extreme cases, the concretions are felt *per anum*, lying close to the rectum, and in a cavity no longer communicating with the urethra. The three plates of prostatic calculi form a series sufficient to support this explanation of their formation. Cases are on record of calculi passing away from the bladder by the rectum, (see *Memoirs of the Medical Society of London*, vol. iii, p. 536;) we can readily conceive how prostatic calculi, when large and in sacs no longer communicating with the urethra, may by abscess and ulceration take this, the shortest route, for their discharge.

the prostate gland from the perinæum, and in the lateral method of litho-cystotomy, to remove such concretions.[7] The following case exhibits some of their worst effects.

A man, aged eighty-one years, was received into the hospital on account of retention of urine. I learnt that a catheter had been unsuccessfully employed, and a false passage made; I however succeeded in avoiding the false passage and got a catheter into the bladder. Introducing the finger *in anum* and pressing upon the prostate gland, I received an impression as if from coagulated blood in the cellular texture; it was a sort of emphysematous feel, which proved afterwards to have arisen from numerous small prostatic calculi. Notwithstanding the introduction of the catheter and evacuation of urine, the patient went on unfavourably; abscess forming in the perinæum, urine becoming extravasated into the scrotum, and notwithstanding free incisions to evacuate the sloughs and urine, erysipelatous inflammation spreading from the scrotum to the abdomen, followed by death nine days after admission.

The bladder, depicted in plate xi, fig. 3, presented a very morbid state of the lining membrane, lymph being adherent to it and blood extravasated into the cellular tissue behind it. The emphysematous impression I had experienced was produced by numerous small calculi, a tea-spoonful or more, occupying a large cyst, or prostatic ducts enlarged into a cyst, at the posterior and lateral part of the gland.

The distinction to be kept in mind, in respect to prostatic calculi is, that they are not urinary concretions, but are formed and may increase without the urine having access to them; they may notwithstanding rise to the orifices of the pros-

[7] Wilson (*on Diseases of the Urinary Organs*, p. 356) says, when prostatic calculi are very troublesome, and can be felt through the rectum, they may be cut out as in operating for stone by the gripe. When enclosed in a pouch towards the rectum, and not communicating with the urethra, it seems to me that they may be safely removed by an incision from the rectum, this bowel being held open by a speculum, at the time the incision is made. Sir B. C. Brodie, in his Lectures on Lithotomy, says you may extract prostatic calculi with Weiss's forceps. Sir A. Cooper *(Surgical Lectures)* cut upon the staff, down to the prostate gland, and removed numerous calculi, which had not only excited painful feelings in the perinæum, but a degree of mental irritation bordering on insanity.

tatic ducts, or get into, and be detained in the urethra, or pass retrograde into the bladder, becoming the nucleus around which a deposit from the urine takes place.

Concretions of another sort about the neck of the bladder ought to be noticed. In aged persons, particularly with hypertrophy of the prostate gland, a bladder diseased, and the veins about it and about the rectum varicose, concretions of phosphate of lime, varying in size from a pin's head to a kidney-bean, are often found in the veins; sometimes they present the appearance of a white pea, as in fig. 6, (b) of plate ii, and an inequality or projection is observable (c) answering to the surface by which the body adhered to the coats of the vein. These concretions have no connexion with the urinary or any other excretions, and should not be regarded as calculi; they are a morbid growth from the coats of the vein, to which at an early period they are invariably adherent, and a membrane covers them, upon the surface where not adherent, which I presume is the extended inner coat of the vein, the morbid growth originating in the outer coat. Fig. 6, (a) of plate ii, shews a portion of vein containing one of these concretions, and d, e, f, g, exhibit them of different shape and size; their chemical composition is chiefly phosphate and carbonate of lime, and they approach nearer to ossifications than to calculous concretions. I remember that Professor Meckel[8] has well represented them, but know of no English author from whom they have received the same attention.

[8] *Tabulæ Anatomico-pathologicæ, auctore T. F. Meckel.* Fasc. II, tab. xiv, fig. 4, 5. Tiedeman, Otto and Lobstein have treated upon these concretions, and met with them in the veins of the uterus, vagina, and spermatic cord.

CHAPTER VI.

OF CALCULI IN THE URINARY BLADDER, AND THEIR PATHOLOGICAL EFFECTS.

The symptoms indicating a calculus to be present in the urinary bladder, are so familiar to all surgeons, and have been so often described, that I shall proceed at once to consider the pathological effects, which, though dwelt upon by so many able authors, are still so various and so important, that a brief exposition of the matter in words, aided by a representation of some specimens from my collection, may excite some interest and prove serviceable, even without possessing the recommendation of either novelty or originality.

A calculus, which may be regarded as a foreign body, can very rarely remain long in the urinary bladder, without creating irritation followed by difficulty and pain in the discharge of the urine; repeated attacks of inflammation of the lining membrane occur, and the muscular coat is called continually into powerful action, to overcome the resistance to the flow of urine and empty the organ of all its contents. The lining membrane of the bladder becomes very vascular, and is often abraded, giving rise to a flow of blood, which tinges the urine; a state of chronic inflammation is established, and a catarrhal condition, or an abundant secretion of mucus is set up and maintained; if the patient keep quiet and recumbent, this mucous secretion is diminished or removed, and the urine voided may be for a time unclouded, although the painful symptoms continue; but in an aggravated degree of this diseased action, and after its long continuance, the secretion is muco-purulent, and the bladder will not recover itself so long as the stone remains, in some instances not even when it is removed.

The straining and vesical tenesmus cause a great increase in the thickness of the muscular coats of the bladder; and frequently sacculi, or herniæ of the lining

membrane between the muscular fibres, are formed, which is indeed so common an effect, that such a condition is met with in a great proportion of those who have long laboured under stone: such sacculi are usually small, but once formed, they may go on enlarging to a great size, and if numerous, may become capable of containing more urine than the proper cavity of the bladder. It is mostly in the adult and the aged, that sacculi of the inner membrane are met with; I have never seen them in the very young: their occurrence would be more frequent, were not the bladder to thicken in its muscular coat and remain contracted close to the calculus; it is where the bladder is not contracted, and its coats not much thickened, that we find large sacs of the inner membrane, which cannot form when the coats are thickened and the cavity small, as represented in plate xiv, fig. 1, already referred to. See also plate xviii, illustrating the presence of sacculi from vesical calculi.

Although sacculi are so frequent, large sacs are rarely found, and consequently a sacculated calculus in the bladder, formerly so often spoken of and now occasionally reported by an unsuccessful operator to be present, may be considered a rare occurrence; it is however one of the complications of this disease, which the surgeon ought to bear in mind and have a clear notion of.[1]

Considering the very morbid condition of the lining membrane of the bladder, where a stone has been long present, it is surprising that ulceration of that membrane should so seldom take place; a more frequent consequence is abscess in the thickened coats, and the matter may find an outlet into the cavity of the bladder (as in plate xvii) or it may escape into the peritonæal cavity and prove destructive; or without the abscess bursting, fatal peritonitis may be induced. These abscesses

[1] The late Mr. Martineau, in his paper on lithotomy in the *Medico-chirurgical Transactions*, (vol. xi, p. 404,) has expressed doubts about calculi being sacculated, giving rise to difficulty in the operation, which shews the disadvantage of trusting to individual experience, without the aid of extensive reading and examination of pathological collections. This present month (October, 1834) in an hospital patient who had for twenty or thirty years been affected by stricture of the urethra, and died from perinæal abscess and urinary infiltration, arising from rupture of the urethra behind the stricture, I found a large sac, or hernia of the inner membrane, just above the termination of the left ureter, filled with a calculus of large size, which also projected into the cavity of the bladder, the entire calculus being of an hour-glass shape, with the isthmus answering to the narrow neck of the sac. A precisely similar specimen is preserved in the Museum of the Royal College of Surgeons in London.

in the thickened coats of the bladder slough or become gangrenous in extreme cases, and aged persons, who have for years been sufferers from stone, usually die from this cause. Many of these morbid conditions are referred to in the explanation of the plates; but there are others, not of less moment to be known, which cannot be so represented, such as the increased power and size of the muscles about the neck of the bladder, levator ani, transversales and ejaculator—the general fulness of the perinæum—the varicose state of veins about the rectum and neck of the bladder,—consequences of painful dysury and vesical tenesmus.

As so much has been said of sacculi of the bladder, I may add that stricture of the urethra may and often does cause them, and give rise to symptoms resembling stone, when none is present. A gentleman had for many years severe stricture, which was at length completely and permanently cured; but painful, frequent micturition continued; he was repeatedly sounded for stone and had the opinion of many surgeons of eminence, without obtaining entire relief; the urine deposited much mucus; after suffering thus several years, he died, and dissection threw no other light upon the cause of the painful symptoms, than the numerous large sacs of the inner membrane, represented in plate xviii, fig. 2. Although sacculi are a disposing cause to stone, none was produced in this case, the patient being very temperate and careful, studying in every way to relieve his pain and prevent an increase of disease. Thus the sacculi, produced by stricture, remained after the latter was cured, and ultimately caused the patient's death.

Stricture of the urethra is more often a cause than a consequence of stone in the bladder; but sometimes inflammation extends from this organ to the urethra, and severe permanent stricture is produced at the membranous part; at other times a stricture from inflammation is suddenly produced. A patient in advanced years suffered inflammation of the lining membrane of the bladder, apparently in consequence of numerous small concretions of lithic acid lodging in it, after descending from the kidney; the inflammation extended to the urethra; there was complete retention of urine, and difficulty in introducing an instrument. A surgeon, in rude attempts with the catheter, made a false passage anterior to the prostate, and the patient dying, I found the state of parts represented in plate xii, fig. 1.

The bladder after many years, and when much thickened and contracted, may actually grasp the contained calculi, allowing not half an ounce of urine to occupy its cavity at one time. This happened in the case of Dr. —— in whom an enlarged prostate gland was followed by four vesical calculi, which at death just filled the cavity and were so tightly compressed, that the lining membrane was indented by them and still retains the impression in the preparation, which is faithfully represented in plate ix, fig. 2.

The worst effects of urinary calculus are found where complicated with stricture of the urethra. By way of example, I may allude to the case of a man, between thirty and forty years of age, in whom urethral stricture brought on a diseased condition of the bladder, followed by stone, as well as fistulæ *in perinæo*, and extensive sinuses communicating with the urethra behind the stricture; after protracted and very severe suffering, he died, from these accumulated diseases. The bladder (shewn in plate xvi, fig. 1) was thickened in its coats to nearly three quarters of an inch—its lining membrane covered with adhering lymph, and in some places gangrenous—the urethra behind the stricture much dilated, and broad bands extending across the passage at this part, forming a net-work, behind which a calculus apparently of lithic acid, is lodged and detained. These bands, the product of lymph thrown out by the inflamed urethra and becoming organized, must have existed long before death, as they are remarkably firm. The calculus (fig. 10 of plate i) which filled the bladder, was of a singular oblong shape, answering to the cavity in which it was contained.

When an urinary vesical calculus has been formed for years, and has brought on severe symptoms, and especially if attended by stricture of the urethra, or enlarged prostate gland, the kidneys, if before healthy, become involved; the severe dysury causes enlargement of the ureters from distension of the retained urine, and inflammation extends along them, even to the kidney itself. The pelvic cavities also become altered in shape and enlarged, the infundibula extended or unfolded, and the lining membrane of all the cavities thus acted upon, from repeated attacks of inflammation, is thickened and furnishes a catarrhal secretion. The parenchymatous substance of the kidney is more or less absorbed, the mammary projections

are obliterated, spurious hydatids occupy the cortical part, and all the serious evils, (ulceration, contiguous abscess or gangrene,) described in speaking of calculi in these organs, are met with as sequela of the vesical calculus: plate x, fig. 1, shews some of these effects; I shall subjoin only two more cases in further illustration of them.

In Mr. K. whose bladder is represented (plate xiv, fig. 1) much thickened and contracted, with stricture of the urethra and an enlarged prostate gland, the kidneys were unequally affected; one was little changed from its normal structure, except in the pelvis being dilated; the other was very large, as in fig. 2 of same plate, and buried in an enormous mass of fat, in which there were abscesses. The whole substance of this kidney was softened and parts of it gangrenous; the pelvic cavity much enlarged, filled with fœtid urine and mucus, and its lining membrane thickened and studded with clots of extravasated blood.

In the case of Mr. C. where the stone was consecutive to an enlarged prostate gland, I had frequently to introduce the catheter, during the two or three years that I was almost daily in attendance on him, and could only succeed by using the gum-elastic instrument; and when I had passed it down to the prostate gland, I held the stilet fast, and pushed the canula off it for two inches, by which manœuvre, the end of the canula, as it passed through the prostatic portion of the urethra, was turned upwards, answering to the curve of the passage, and thus entered the bladder; I could never succeed but by adopting this method.[2] The bladder is shewn in plate xv, fig. 1; the prostate seems to occupy half its cavity, by a general enlargement of the lateral lobes; the coats are most thickened at the fundus, where an abscess had formed. One kidney was greatly diseased, and is represented, after being minutely injected, in same plate, fig. 2; the mammary processes are obliterated—the pelvis much enlarged—and its lining membrane thickened and extremely

2 The late Mr. Hey in his *Practical Observations on Surgery*, (p. 437, plate ii, ed. 1810,) first described the effect of withdrawing the stilet of a flexible catheter a little, increasing its curvature and bringing the end of the instrument forwards. I refer to a different manœuvre, holding the stilet fixed and pushing the catheter off it to the extent of an inch or more; one of these plans will often succeed, in cases of enlarged prostate, when the other fails; and often the surgeon accomplishes his object by adopting each method in succession.

vascular—the ureter is narrow at its commencement and takes an angular turn the same as in the kidney, fig. 2 of preceding plate.

Wishing to state scarcely more than I can demonstrate, I forbear to enter further upon the subjects of this chapter by giving a more systematic review of the pathological effects of a vesical urinary calculus.

CHAPTER VII.

OF SOUNDING FOR A STONE IN THE BLADDER.

The restricted and ordinary meaning of sounding is, the introduction of an instrument through the urethra into the bladder, to obtain evidence, by the touch or hearing, of a calculus being present. In dedicating a separate chapter to this subject, I wish to take a more comprehensive view, including all collateral methods of gaining information, not only of the presence of a stone or stones, but their size, situation, mobility, number and texture.

Few operations are more abused and less skilfully practised than this, an instrument being unceremoniously thrust into the bladder, wherever there are symptoms resembling those of stone; and not only the young and overzealous, but even the well educated and more experienced surgeon, persists often in making repeated examinations to find a stone, where none happens to be present, fearing lest he should fail to detect it, and lose the opportunity of éclat from a case of lithotomy. I have observed two strong reasons against the practice of frequent and persevering sounding; first, because it is not without danger, and secondly, because there are so many other morbid conditions of the urinary organs giving rise to symptoms resembling those which a vesical calculus ordinarily produces. In consequence of persevering and unsuccessful attempts to discover a stone with the sound, in a little boy, inflammation of the bladder came on, attended by vomiting, and extending to the peritonæum; the most active antiphlogistic treatment failed to arrest it, and death ensued in four days.

Where tumours are present in the bladder, particularly of a very vascular or of a malignant character, sounding is very deleterious; and such cases are attended

by symptoms very like those of stone. In the patient, whose bladder is represented in plate xix, fig. 1, and where a vascular tumour, planted round the termination of the right ureter, projects extensively into the bladder, many soundings were practised, and always followed by great bleeding and an increase of the patient's sufferings. I lately had under my care a tall middle-aged man, suffering from such symptoms as a stone in the bladder would produce; he had become much emaciated in a few months, and almost daily lost some blood from the bladder, even when quiet and recumbent, and particularly after the use of the sound; I satisfied myself with thrice gently and guardedly examining him with the sound, but could detect no stone, and attributed his symptoms to a vascular tumour in the bladder.

It would be inexcusable to omit a detail of the following case, which occurred in my own practice not a few years since.

Master C. was about a year and half old, when I was first consulted about him, on account of frequent inclination to pass his water, attended by straining and painful efforts; he had been observed to be thus affected little more than a month, and was already shrunk by severe suffering. Medicine failing to relieve, I at length sounded the bladder, but could feel no stone. Alkalies, opiates and the warm bath were employed; he always rested a little better on the night the bath was taken; still his symptoms increased in severity, shrinking him rapidly. He was continually wet with urine, which was passed in drops, an effort being made at various intervals, from a few minutes to half an hour. Each attempt to void the urine was accompanied by violent straining and rubbing the end of the penis with the hand. The nights were passed in the same manner as the days, except that during the former, the little patient was said to scream more and strain rather less violently; unless laudanum were given him, he never got any rest until the morning, when he would occasionally sleep hurriedly for an hour or two. At almost every fit of severe straining and voiding of urine, a little fœces were passed, but the rectum never prolapsed. About every two or three weeks, I used the sound gently, and twice thought I felt a stone, but not satisfactorily; when I received this impression, it was always on passing the sound towards the left

side of the bladder. No bleeding ever followed the several soundings performed by me during three months, and the urine was generally voided a little better afterwards, sometimes as much as a table-spoonful at a time. On the twenty-eighth of December, I again used the sound, which was resisted by something unusual towards the left side of the bladder; for several days after this examination, the urine was tinged with blood. The patient had become greatly emaciated by this time, the skin hanging flabbily about him, and the countenance presenting as expressive a picture of suffering and grief, as ever I witnessed. Soon afterwards I called into consultation the most experienced surgeon on the spot, who was of opinion that he felt a stone; to me the evidence was not at all clear, and I could only state that I believed I sometimes felt a stone towards the left side of the bladder. Various ideas passed through my mind, in the course of these examinations. I thought a stone might be encysted at the termination of the left ureter, as it was thereabouts I always felt the resistance; I had frequently introduced the finger into the rectum, whilst sounding, without gaining any information, except that when the child screamed, and the muscular coats of the bladder contracted firmly upon its contents, it felt like a firm tense ball, shaped like, and about twice the size of, a walnut. I believed that I could feel a prominence, answering to the termination of each ureter in the bladder.

The little boy was evidently sinking under his painful disease, and when two years old, it was agreed that an operation should be attempted for his relief; it was accordingly performed on the tenth of January. I introduced the curved staff without difficulty; the anus prolapsed from the violent straining. The same experienced surgeon who had met me before in consultation, now gave his assistance, and stated again his opinion that he felt a stone; I stated I could not do so, although I introduced the sound, as well as the staff; but I felt a resisting body at the left side of the bladder, about the termination of the left ureter. I hesitated about proceeding further; after a few minutes delay, however, I determined to cut into the bladder, and re-introduced the staff for this purpose. I observed there was a great fulness of the perinæum; as soon as I cut down to the staff, and opened the membranous part of the urethra, a semi-transparent substance appeared

in the wound, resembling the mucus which had been passed from the rectum by the child's straining when first placed upon the table, and I feared that I had, for the first time in my life, wounded the rectum! and the same impression, I afterwards learnt, momentarily pervaded the minds of the numerous bystanders. This accident was not, however, sufficient to baffle me, nor to prevent my proceeding in the rest of the operation in which I was embarked. With the assistance of my left fore-finger, guided by the staff, I carried the scalpel forward fairly to the neck of the bladder, and on withdrawing the knife, I observed that the wound became instantly filled with a mass resembling, on this sudden view, what one would have expected to see, had I opened the peritonæum and allowed the processus vermiformis and several folds of the small intestines to protrude; such was the momentary, frightful impression, that held the mute attention of myself and all who were present! I pushed back the protruded parts, carrying my left little finger into the bladder, where I could feel no stone, but found the cavity filled with soft tumors, with a firmer substance near the orifice of the left ureter. If I betrayed any judgment in the case, it was undoubtedly in this stage of the business, by relinquishing the forceps held in readiness for me, and withdrawing my finger from the bladder. The same parts then protruded, as on the bladder being first opened, and they proved on inspection to be tumours, connected together like a cluster of grapes, some more some less transparent, resembling in firmness, appearance and structure, the mild polypus nasi; the membrane by which they were connected with each other and with the inner surface of the bladder, was long and loose enough to allow some of the tumours to hang externally dependant at the wound, and I have no doubt that, by the violent straining efforts of the child, when first placed on the table, they had entered the urethra; this is indeed proved to have happened, by the tumours appearing in the wound the instant I bared the staff, and it accounts for the fulness of the perinæum which I noticed immediately before commencing the operation.

The nature of these tumours being now understood, and no doubt left of their being mild polypous masses growing from the inner surface of the bladder, it became obvious that the only chance for the patient's recovery must be sought by removing

them; I accordingly cut off with scissors all that were within sight. The violent straining efforts, which the child had kept up constantly during the operation, brought several more tumours, as big as grapes, down sufficiently low to admit of being cut off. Very little bleeding followed the excision of these tumours. Introducing now a fore-finger into the bladder, I ascertained that more of the diseased structure remained behind, than had been removed; and as many of the remaining tumours were attached to the bladder by a broad basis, it was deemed advisable to make no further attempts for their removal. To have introduced the forceps, with the intention of tearing away these tumours, as is often done with a polypus nasi, would have inflicted irretrievable injury to the bladder; fortunately I endeavoured to conduct the whole of these proceedings as gently as possible, that the operation might, even by the most prejudiced, be regarded as having little to do with the unfavourable result I anticipated.

Notwithstanding a powerful opiate was administered, the child continued to have violent fits of vesical tenesmus after the operation, and could scarcely be prevented from placing himself in his usual posture, resting upon his knees and elbows, to give full effect to these exertions. At the end of four hours, I placed him again on the table, to ascertain whether these efforts had caused any fresh tumours to protrude. The wound was plugged up with a coagulum, which I removed, exposing a tumour as big as a nut, and of a purple colour from either bruise of it or constriction of its neck; this I easily brought lower down with my fingers, and with scissors cut through the narrow neck by which it was attached to the bladder. I again introduced my forefinger into the bladder, so as to examine the whole of its cavity; no more tumours descended on the finger being withdrawn. Much of the diseased structure remained, so extensively connected with the inner surface of the bladder, that I could not undertake to meddle with any part of it. Had I found tumours fixed by a narrow basis, I should not have hesitated to introduce curved scissors into the cavity of the bladder and cut them off, knowing that unless the bladder were emptied, the tenesmus would go on to the quick destruction of the patient—opium freely given, quieted, but did not prevent fits of straining from recurring every five or ten minutes; it was only by actual restraint that the child

could be prevented from placing himself on his knees and elbows as he had been accustomed: still nothing more protruded through the wound, which looked well, and gave passage to an ample quantity of urine. The perpetual straining efforts wore out the feeble powers of the little patient in forty-four hours.

On inspection of the body, I found the peritonæum entire and free from inflammation; the rectum was also uninjured. The ureters were much enlarged, and contorted; the pelvis of each kidney was so increased in size, that between one and two ounces of urine could be contained in it, (see plate xx, fig. 4.) I opened the bladder by a central incision in front, and found its muscular coat much thickened; at its fundus, there was a convex prominence, covered by peritonæum, which I cut open and found to be a firm mass of thickened cellular substance, situated external to the muscular coat, and containing a small central cavity (k, plate xx, fig. 2) filled with pus. The fatal disease occupied the lining membrane of the bladder, which was loosely connected with the muscular coat, and very abundant so as to fall into folds, also thicker than usual, and having a gelatinous appearance. The cavity of the bladder was still occupied by tumours, growing from the lining membrane, and situated at the inferior part near its neck. One large tumour, with a broad basis, was firmer than the rest, and placed near the termination (h) of the left ureter; this must have been the resisting body so generally felt on sounding. Several small detached tumours, from the size of a pea to that of a bean, were loose in the bladder. Towards the neck of the bladder, the tumours, as expressed in the drawing, had a different structure, presenting a wart-like surface; but all the tumours were covered with their proper membrane, continuous with the inner coat of the bladder, which was uninjured, except in three or four spots where I had cut off the tumours with scissors.

The neck of the bladder and prostatic portion of the urethra were much dilated, and the narrow basis, by which the tumours about the neck of the bladder hung, was sufficiently loose to allow them to descend into the prostatic and membranous parts of the urethra, which no doubt happened during life, causing the fulness of perinæum, and accounting for the foremost of the tumours prolapsing through the wound, as soon as I opened the urethra behind the bulb. The disease was strictly

seated in the lining membrane of the bladder,[1] none of which was in a healthy condition, being loose, gelatinous and thickened, in all parts where polypous tumours did not arise, from the termination of ureters to the fundus. The condition and extent of the disease being known, render it evident that no effectual relief could have been given by an operation; but were it possible to ascertain the presence of circumscribed, benign, polypous tumours of the inner membrane of the bladder, such as could be completely removed by the scissors, cystotomy might with propriety be undertaken, and the life of the patient saved by it. The difficulty is in the diagnosis of the proper case; and although it has been actually advised, and is stated to have been successfully practised,[2] I question if the surgeon can ever beforehand feel sure that the circumstances are present which demand from him such an undertaking with fair promise of success. Men of very great experience and renown have publicly operated, expecting to find a stone, where there proved to be none;

[1] Dr. Baillie has represented a polypous disease of the lining membrane of the bladder in a child, closely resembling the case I have here detailed. (*Engravings illustrating the Morbid Anatomy of the Human Body*, Fasc. VII, plate iv, fig. 2.)

[2] Callisen says in reference to the *polypus vesicæ*, that the catheter, injections, &c. must be used,— "si vero, quod sæpissimè accidit, his resistat malum, ad incisionem colli vesicæ tumorisque sequentem irritationem, macerationem, ligaturam, evulsionem, prout rei indoles suaserit, indicatam recurrendum erit; quæ omnia sub ischuriæ et calculi vesicalis chirurgia uberius exponentur. (*Systema Chirurgiæ Hodiernæ*, tom. ii, p. 190.) Le Cat invented an instrument for extirpating fungous excrescences of the bladder. (*Philosophical Transactions*, vol. xlvii, p. 29.) M. A. Petit of Lyons performed cystotomy, on a young woman, supposing there was a stone, other persons believing they felt one as well as himself; but it proved to be a polypous tumour of the bladder, and they agreed that nothing could be done; the patient lived a year afterwards, and Petit, on dissection, "trouva dans la vessie, un polype du volume du poing, d'une forme pyramidale, et tenant par un pedicule extrêmement étroit." The narrator of this case (*Dictionnaire des Sciences Médicales, Article Polype*, tom. xliv, p. 233) says, that under such circumstances, with a polypus having a narrow neck, you should tie and extract it; but in every other case, he advises not to lithotomize, even though it be thought that a polypus is felt on sounding. Lassus (*Pathologie Chirurgicale*, tom. i, p. 522) has some good remarks on fungous tumours of the bladder, which he likens to polypi of the pituitary membrane, having a pedicle; but I suspect he has confounded with them tumours of the prostate gland, projecting into the bladder. Covillard (*Obs. Iatrochir.* p. 93) performed cystotomy for a tumour in the bladder, the size of a nut; "je la mouchait avec les tenettes, ce que réussit de sorte qu'en moins de huit ou dix jours, la dite tumeur termina par suppuration;" and in a month the patient was convalescent. The most remarkable case of a tumour, growing from the inside of the bladder, and successfully extirpated, is related by Warner. (*Philosophical Transactions*, A.D. 1790.)

it so happened to Cheselden and to Dessault ;[3] and the like error has befallen several of the most eminent lithotomists of the present day in this country. I have notes of not less than eight such cases, occurring to practitioners within my own sphere, to several of which I was an eye-witness. I make these observations to enhance the importance of sounding, and to shew that the practical application of it may at present be regarded as ineffectual, and deserving of more consideration than is usually given to it; for it is an operation demanding much attention, that it may be done with delicacy to avoid evil consequences, and with discrimination that other diseases of the bladder may not be mistaken for a stone, nor the latter believed to be present when there is no stone. Owing to modern improvements, sounding has lately become of more extensive application and of greater value, being now performed not solely with a view to cystotomy, but to detect a stone when small, that it may be brought away through the urethra, or to judge of the size, consistence and situation of a stone, preparatory to breaking it up in the bladder.

The information gained by sounding is obtained through such a mixed exercise of the senses of touch and hearing, that it is not easy to separate them, nor to say how much is derived from each. In the selecting of an instrument, we fix upon what is calculated to impress both these senses, and a solid one of steel is so commonly preferred as to be denominated "*the sound;*" although instruments of other materials, and not solid, are often employed, as will be subsequently noticed.

For a general description, we may say, that a sound should be as long as a catheter, and curved for the last three or four inches (plate xxviii, fig. 2) that it may pro-

[3] Benj. Bell, in his *System of Surgery*, vol. ii, p. 40, affirms that Cheselden thrice lithotomized and found no stone. Many similar cases are to be found in the *Mémoires de l'Academie de Chirurgie*. Baron Dupuytren cut a child two years and a half old, and there was no stone; death happening some time afterwards, there were found suppurated scrofulous tubercles, affecting the bladder near the orifice of one ureter, and the same disease in the lungs. (*Leçons Orales*, tom. ii, p. 334.) M. Roux operated on a child of the same age; death ensued in sixty hours, and there was no stone. (*Johnson's Med. Chir. Journal for April*, 1827, p. 549.) Of the cases to which I allude as happening within my own sphere, one is accounted for by a projecting sacrum, in a very narrow pelvis, affording resistance to the sound, and giving a belief of a vesical calculus being present. In a female, I believe the sound to have stopped against the uterus, giving rise to the error into which the surgeon was betrayed. In two, if not more instances, all the painful symptoms, simulating those which a vesical calculus creates, were perfectly removed by the operation performed.

ject into the bladder; it should not be so large as to fill, much less to distend the urethra, but of moderate size, that it may readily be moved backwards and forwards in this passage, and its curved part turned in different directions in the bladder. Every surface should be well polished, and the handle, being always intended to suit the operator, should be broad enough to receive the thumb and two fingers, and not small, whatever be the size of the rest of the instrument. It is necessary to have the handle well polished, that the fingers may touch a greater surface, and receive and recognize the most delicate impression; by being wedge-shaped, or thinner at its extremity than next the body of the instrument, it has the advantage of increasing the impression conveyed to the touch by any resisting body, when the instrument is pushed onwards, the most usual and always the first movement to be given it in sounding. The custom of the instrument-maker in placing his name on the handle, thereby interrupting the smoothness of surface where most necessary to preserve it, should be countermanded, and every instrument so defaced be rejected as imperfect.

Children are never sounded in the erect posture; but when you have to deal with an adult patient, it will be found advantageous to make the first examination in that posture; in doing this, you should, with as little preparation and alarm to the patient as possible, introduce the sound lightly and gently, with a very delicate hand, endeavouring to steal as it were through the passage, by employing scarcely more than the weight of the instrument to propel it along and elevate its extremity into the bladder; if the operation be thus feelingly and judiciously managed, in nine instances out of ten, when there is a loose stone of any considerable size in the bladder, it falls down to the neck of this viscus, and is felt on the sound first entering. By alternately depressing between the thighs, and elevating the handle of the curved sound, you vary the extent to which it projects into the bladder, and will often in this movement feel a grating of the calculus against the instrument; the impression thus obtained is usually obscure and seldom to be relied upon. With the handle depressed more or less, and held centrally, answering to the median line of the body, you may jerk it upwards and backwards towards the

rectum, when it will strike a stone lying in that direction, producing a sensible resistance and often also an audible sound, satisfactory evidences, when conjoined, of a calculus being present. You may give the same movement to *the sound*, with the handle inclined more or less to one groin, and thus explore each lateral, as well as the posterior part, of the bladder. Should a stone not be felt under these movements of the sound, you may suspect it to be on the pubic or concave side of the instrument, when it will be felt by your drawing the instrument downwards and forwards, which movement should be performed first with the handle answering to the median line and more or less depressed between the thighs, and afterwards, with it inclined obliquely to either side, which will explore the lateral and anterior part of the cavity; if in any of these trials, the stone be felt, touching the concave side of the sound, you know it to be situated towards the os pubis; you may also, with the curved sound projecting considerably into the bladder, turn the handle to some extent upon its own axis, making its extremity describe a part of a circle, and sweeping the upper and lateral parts of the bladder. By a practised hand, the sound is in a short time made to perform these different movements, and the object is, by a regular succession of them, to carry the sound to every part of the vesical cavity.

Where a careful sounding is required, the patient should be placed horizontally on his back; indeed the surgeon should always bear in mind how advantageous it is to vary the position of the patient, and how much may be gained by so doing. If, when the patient is standing, the stone be felt on the pubic side of the instrument, and when dorsally recumbent, you find the stone behind it, towards the rectum, you know it to be moveable and loose. The sound being in the bladder, the shoulders of the patient may be raised into the half-sitting posture, or they may be depressed greatly so as to have the pelvis on the top of an inclined plane and make the axis of the spine answer to an angle of forty-five degrees, this latter being the method to remove the stone from the neck of the bladder and carry it to the fundus; he may likewise be placed on either side, or upon his hands and knees with the face downwards; all these changes of position should be made after the

sound is introduced; the last is particularly applicable to cases of enlarged prostate gland, behind which there is a cavity not accessible to the long curved sound by any movement that can be given to it; and you can only remove this defect by changing the situation of the stone in the bladder, which is accomplished by altering the position of the patient.

Where the sound touches the stone in different directions, and is found to pass over a large surface of it, you may conclude it is of large dimensions; but when, under the same position of the body, you do not feel it repeatedly, on passing the sound to the same part of the vesical cavity, it is likely to be small.

The stethoscope placed upon the os pubis, or any where over the region of the bladder, will be found an useful assistant for discriminating the impressions conveyed through the sound; where the impression, as otherwise ascertained, is feeble and obscure, the assistance of this instrument for auscultation should be availed of and may by experience be turned to most profitable account. The surgeon, whilst employing the stethoscope, may move the sound himself or give it into the hands of an assistant, and in either case derive information from the former instrument. Vesical auscultation admits of many more researches and is probably susceptible of valuable improvements.

The bladder requires to be examined when empty as well as when containing urine, and a silver catheter is often beneficially used for this purpose; you introduce it into the distended bladder, using it as a sound; then you draw off the urine, and again move the catheter about; and often you will feel a stone that escaped detection before, particularly a small stone, brought down to the neck of the empty bladder and pressing against the catheter where the openings are situated, affording an indisputable grating feeling and noise. The same instrument answers our purpose when we wish to make sure whether the bladder be capable of emptying itself of urine; the surgeon should know how much urine this organ can contain, and whether it evacuates all that is in it or not, which knowledge cannot be gained without a hollow instrument being employed. The state and condition of the bladder itself have to be investigated in sounding, not less than the presence of a stone ascertained.

The gum-elastic catheter, so greatly extolled and preferred by high authorities,[4] will be found to give feeble evidence of a stone, such as I would not rely upon for undertaking an operation; I consider it suited to cases of enlarged prostate, or where you cannot readily get another instrument into the bladder; but never ought to be employed to the exclusion of the solid sound or the silver catheter, when cystotomy is to be decided upon.

If the surgeon meditate to operate with a straight staff, he must introduce previously a straight sound (plate xxviii, fig. 1;) but such an instrument can be expected only to detect a moveable stone resting at the neck, posterior part or fundus of the bladder, and is not suited for exploring the whole of the vesical cavity, nor capable of taking a great variety of movements.

In every case, before undertaking an operation for the removal of a vesical calculus, the surgeon ought to examine with the finger *in ano*. In young patients, we can feel through the rectum the whole outline of the bladder, and often tell the size and situation of the stone contained in it. In the adult, examining by the rectum enables you to detect a calculus in the membranous or prostatic portion of the urethra, or acquaints you with the size and condition of the prostate gland; and when the finger is long enough, you can tell the state of the bladder, as to tenderness on pressure, and thickness of its coats. Not unfrequently you can feel the stone by the rectum, balance its weight upon the finger, or tell its shape, its surface and situation.[5] A good deal of tact is however required to profit by this mode of examining; in a child during violent screaming and straining, the coats of the bladder contract so firmly on the contained urine, that it feels a tense body, shaped like a walnut; and no stone can be detected, till this state has subsided. In judging of the size of the stone, you must allow for the thickness of intervening

[4] The late Sir E. Home, Bart. and Sir B. C. Brodie, Bart. have particularly recommended the gum-elastic catheter for sounding, introduced without the stilet, and have pointed out the advantages it possesses. In the *Edinb. Surgical Journal*, vol. xii, p. 295, a sound with a bulbous end is described by Mr. James Barlow, which is deserving of attention.

[5] Rudtorffer observes that examining *per rectum* with the finger gives evidence, in respect to the stone, as to "number, size, roughness and mobility." (*Abhandlung über die Operation des Blasensteines nach Pajolas Methode*, s. 61.)

parts, or when the bladder is much thickened you will estimate the stone to be larger than it really is. When the bladder contains a few ounces of urine, and the stone is not of considerable size, it gives so evasive an impression to the finger *in ano*, that much practice is required to profit by this examination, and to tell that you feel a stone; but where this foreign body is very large, it can always be felt by the rectum, unless there be a greatly enlarged prostate gland or other tumour interfering. In this method of exploring the bladder, the patient is placed horizontally on the back, or with the shoulders raised; but the surgeon has more command, and sometimes facilitates his object, by making the patient stand on a bed or table; if the bladder be empty, only gentle pressure with the finger should be made, as it will injure the lining membrane, particularly if the calculus be rough on the surface. I have known so much mischief arise from the undertaking of operations for stone without previously examining by the rectum, that I am induced to represent forcibly the propriety of doing it in every instance; I should deem myself as little justified in omitting this method of exploration, as in operating without having sounded at all.

It has been recently suggested to use a sound with a very short curve,[6] such as fig. 4 of plate xxviii, in order that, when introduced into the bladder, it may be turned round upon its axis, the part occupying the urethra being straight; its curved end will thus describe a circle in the bladder, and pass behind the prostate gland, searching the *bas-fond* of this organ, which is just the part of its cavity least accessible, sometimes quite inaccessible, to the long curved sound. A late eminent surgeon[7] gave me, twenty years ago, a catheter shaped like one of the sounds now referred to, and assured me he had sometimes found it enter the bladder, when an instrument of a different shape would not. It is right to have at hand an instrument thus shaped, and to take advantage of this circular movement of its curved part in the bladder; but it appears to me that neither this nor the

6 Baron Heurteloup *(Principles of Lithotrity)* gives the name of recto-curvilinear sound to an instrument of this shape, and may perhaps be regarded as the first surgeon who suggested *rotatory sounding*.

7 Mr. John Pearson, of London.

straight sound is suitable for introduction into the bladder in every case, and cannot safely be introduced where the prostate gland is much enlarged, owing to the turn upwards which the prostatic part of the urethra makes in such cases; if forcible attempts be made, the instrument will be likely to pierce the prostate gland after the manner that a surgeon pierced it once with the curved catheter in a patient of mine (see plate xiii.) I am convinced that I have known serious and even fatal injury done to the prostate gland by the lithotrist, in attempts to get a straight instrument into the bladder under such circumstances.

The consistence of the stone, as well as its size and the kind of surface it presents, are so many points, on which evidence is gained by sounding; but much depends upon the exercise of the surgeon's faculties, for which no clear rules can be laid down; the most acute and experienced operator, who can tell, perhaps with tolerable accuracy, not only the size and consistence of a stone, but its shape, whether flat or round, is unable to instruct others how to accomplish as much. Every surgeon is however called upon to form a judgment about the size of a vesical calculus, in doing which he is assisted by the history of the symptoms, their nature, degree, and duration, in addition to the evidence derived from sounding. Where the symptoms have clearly existed only a few months, the stone will usually be small, and they must be present for years, before a calculus of several ounces can be formed. At the risk of having to repeat the remark, I shall venture, in concluding this chapter, to state, that I have known in several instances lithotomy performed, for a stone so small, that it might have passed, or been readily brought through, the urethra; and on the other hand, for want of carefully sounding, of examining by the rectum, and of paying due regard to the long duration of symptoms, fruitless operations have been undertaken, the stone proving too large to be extracted out of the bladder.

CHAPTER VIII.

ON REMOVING VESICAL CALCULI THROUGH THE URETHRA.

In consequence of the ureters becoming dilated, calculi have descended through them into the bladder, of too great a size to pass away by the urethra; but with the exception of such rare cases, it may be stated that every stone in the urinary bladder must at one period have been so small, that it might have passed away, or been removed, through the urethra; and since, through the valuable discovery of Sir A. Cooper, we are become possessed of an instrument, by which small calculi can be seized in the bladder and extracted thence, their early detection by symptoms and by sounding is rendered of vast consequence to many patients, and a necessary object of strict attention with every intelligent and conscientious surgeon.

Where symptoms of stone have not existed above two or three months, or have been absent for a time and suddenly returned in a severe degree, producing itching at the end of the penis, frequent painful micturition, and occasional retention of urine, we may suspect that a small calculus is present in the bladder. With a small stone, the patient is often free from all inconvenience for a day or two, and even a week or two, and then is suddenly seized with retention of urine and most distressing pain, from the calculus entering the commencement of the urethra. In the interval between these sudden and acute attacks, the patient experiences only a slight itching at the end of the penis, irritation about the neck of the bladder, and a more frequent and sudden call to pass urine than is healthy. On

sounding at this early period, you will occasionally find such an audible click, or noise produced, when you strike the stone, as can be heard at a distance of several yards: and the evidence thus obtained, more audible than tangible, arising from a clear and sharp sound, I have experienced only when the stone is small.

A farmer was sent to me from a distance, to undergo lithotomy, the surgeon so recommending him having felt a stone in the bladder. The history I learnt made me suspect a small stone, for he had only suffered three or four months, was sometimes free from inconvenience for several days, had no increase of pain from walking or riding, but suffered usually a frequent call to pass urine, with itching at the end of the penis; sometimes the water stopped suddenly when he was voiding it, before the bladder was emptied. In sounding, I could sometimes feel the stone, at others not; when I felt it, a loud sound was produced, such as could be heard several feet from the patient, at the same time that a very evasive touch and very little resistance were afforded by the stone. Having felt the stone, when I repeated the trial, with the sound moved in the same direction, no stone was there. Such signs were sufficient to make me regard the stone to be of small size. I introduced the urethro-vesical forceps constructed by Mr. Weiss, (plate xxviii, fig. 5,) and readily removed through the spacious urethra of this patient a heart-shaped calculus, measuring one inch and three quarters in its smallest circumference. In two days the patient returned home cured, and has for several years remained free from a relapse.

It is requisite that the surgeon endeavour to satisfy himself of the calculus being of a size to warrant a trial of the urethro-vesical forceps, so as to avoid the risk of making attempts, where the stone is much too large to be removed through the urethra; such attempts may not only prove fruitless, but highly injurious and even dangerous. In a case where persevering trials were made, the forceps continually slipping off the stone, on account of its being too large to be properly grasped by the instrument, or admitted to enter the urethra, such a severe degree of inflammation of the bladder ensued, as required most active antiphlogistic treatment to save the patient's life. The surgeon ought therefore to consider well whether the signs of a pretty large stone be present, some of which do not transpire on examin-

ing the bladder in sounding, but are ascertained by the patient's own account of his feelings. When the bladder is empty, if pressure above the pubes give a shooting pain in the glans penis; or when urine occupies the bladder, if the patient, on turning in bed from one side to the other, feel something move in its cavity; or if change of posture from lying to standing produce a sharp pain in the glans penis and neck of the bladder; each of these may be considered indicative of a stone of considerable size being in the bladder, too large to be removed through the urethra.

Perhaps the best indication we can get, of a vesical calculus being of small size, is to have traced it, not long before, passing through the ureter from one of the kidneys; but this source of information is rarely afforded, and the surgeon must trust to, and form his judgment upon, the reported duration of the symptoms, the preceding and present degree of their intensity, and the evidence derived from sounding the bladder. If the symptoms have steadily persisted, in a severe degree, for six or eight months—if the concussion of walking or riding produce pain in the glans penis or occasionally render the urine bloody—if there be a burning heat at the end of the penis, continuing some time after each evacuation of the bladder—the stone may be regarded as of too large a size to be brought through the urethra, and the urethro-vesical forceps ought to be very guardedly, if at all, employed; and when sounding comes in support of the opinion that there is a calculus of considerable size present, as pointed out by the dull noise, firm resistance, and extent of surface touched, the urethro-vesical forceps should on no account be introduced.

A small calculus, lodging at the neck of the bladder, or just entering the urethra, so frequently causes retention of urine, that this circumstance should be borne in mind by the surgeon, and if he cannot assign the cause of sudden retention, he should examine carefully and endeavour to ascertain whether a stone be present. In numerous instances of large vesical calculi, demanding cystotomy for their removal, I have learnt, by the previous history, that the patient had suffered sudden retention of urine at the time when the stone must have been small, and no doubt produced it, yet was not detected by the surgeon, who might otherwise have

prevented the future danger and mischief by removing the small calculus through the urethra.

The situation of the stone, suspected to be small enough for the use of such an instrument, should be first ascertained by a common sound, having the same length and curvature as the urethro-vesical forceps intended to be used; sometimes a bougie may be used to dilate the urethra or take off its irritability; and where there is any degree of stricture, it should be removed by proper treatment, as a preparatory step to the extraction of the calculus. One disadvantage of the urethro-vesical forceps, as commonly constructed, is that the urine escapes through the tube, and unless you are fortunate enough to seize the stone quickly, you must act in an empty bladder, instead of one distended with urine; the instrument ought to be so closely formed as to prevent the urine from thus escaping.

When the urethro-vesical forceps are introduced, they should not be made to project further into the cavity of the bladder than is necessary to feel the stone, before expanding the blades; if you project the instrument too far into the bladder, and the stone be small, it may lodge between the expanded blades, at too great a distance from their extremity, (as shewn in e, of plate xxviii, fig. 5,) keeping the blades more expanded than is necessary, thereby creating difficulty, and inflicting pain, in the extraction, that might be avoided. If on the other hand the stone be held at the end of the blades (as in f, of the same fig.) it will inevitably slip away when you attempt to bring it into the urethra. Feeling the stone at the extremity of the closed blades, you push these on a little, after expanding them, and endeavour to catch the calculus (as in g, of fig. 5,) being the position most advantageous for extracting it through the urethra.

Employing the urethro-vesical forceps in an empty bladder, or pushed too far into its cavity, you endanger catching the lining of the bladder between the blades as they close, no protection being afforded by the construction of the instrument against this accident; it is perhaps advisable to have one blade longer than, and over-lapping the other, which not only protects the bladder, but a small stone, being grasped, will be prevented from slipping away, and cannot fix between the very extremity of the open blades. (See fig. 6 of plate xxviii and explanation.)

If the stone, fairly grasped by the forceps, can be brought into the urethra, it will in general pass readily through the prostatic portion of this canal, which offers the least resistance of any; and when it arrives in the membranous part, you may feel it *per anum* with the left forefinger, and if of considerable size, you can press it forwards, supporting it and preventing its slipping from the grasp of the blades; if very large, you may not be able to bring it any further than the membranous part of the passage, in which case, rather than make violent attempts to do so, you should extricate the forceps from it, and keeping the left forefinger curved beyond it *in ano,* press it forward in the perinæum, and cut upon it by the gripe or Celsian method, or by a lateral incision, as in lithotomy. If the calculus can be brought into the spongy part of the urethra, it has escaped the resistance of the most powerful muscles and also of the triangular ligament, and can be carried on to the orifice; I have, however, been obliged to cut calculi out, not only at the perinæum, but just anterior to the scrotum, finding it impracticable to bring them further forward, on account of their size, or having allowed the forceps to slip off and being unable to re-apply them. Under some circumstances, where you cannot get the calculus further onward, you may be glad to push it again back into the bladder, reserving it for an early future trial; but where practicable, it is better to cut the calculus out at once. Sometimes a stone, which has been readily made to traverse the rest of the urethra, cannot be made to pass the narrower and firmer orifice; when difficulty is experienced in this situation, rather than persist in using great force, it will be proper either to crush the stone, or to make an incision for its exit just behind the external orifice, whereby the patient will be spared much pain. The following case, with which I shall terminate this short view of the subject, will shew many practical points connected with this operation, which is indeed one of such considerable importance, that, were it timely practised in every case of a vesical calculus, it would effectually prevent the necessity of having recourse to any other more severe and more dangerous procedure. It has been advised to give tartarized antimony *ad nauseam* during the extraction of a calculus, but I question the propriety of the practice, and deem it more safe to leave the patient sensible, as a security against any over distention or laceration of the

urethra, whilst the resistance of muscles will be sure to yield to continued moderate pressure.

A patient sixty-six years of age, came under my care on account of passing his urine frequently and with great pain, being otherwise healthy. Every three or four days he suffered complete retention of urine, requiring the catheter, which he employed himself; for five years he had suffered in this way, demanding the catheter seldom less than once, and often twice or thrice, in a week. Two years previously, this patient came to me from a distance, labouring under complete retention of urine, and his surgeon being unable to pass the catheter: I readily relieved him, but felt no stone; the prostate gland was enlarged, and I attributed the occasional retention to this disease. On the present occasion, I without difficulty felt a calculus, which I believed to have been formed in consequence of the enlarged prostate, inducing dysury. After exhibiting a warm bath and castor oil, I carefully examined the patient in the recumbent position; by the sound, moved in different directions, I could feel a stone, and the click or noise on sounding was very audible to the by-standers. Considering that a stone was so easily felt, and that the symptoms, according to the statement of the patient, had lasted several years, I at first thought the stone might be large; but at a second sounding, I could sometimes feel the stone, sometimes not, with the sound passed in the same direction; and other persons present, besides myself, thought that striking with the instrument in different directions, produced sounds not exactly the same, but of a slightly different pitch, as if there was more than one stone; the stethoscope being employed, assisted us in confirming this impression. Repeating the sounding, I was led further to suspect a small stone, from the evasive touch or slight resistance, the very audible sound produced, and the uncertainty of feeling the stone. I accordingly used the urethro-vesical forceps, placing the patient recumbent on his back, with the shoulders raised. I readily felt a stone, sometimes on the convex, sometimes on the concave aspect of the instrument; and when the stone was in the former relation, and near the end of the instrument, I grasped it on expanding the blades, and proceeded to extract it. When I felt that the end

of the instrument was so far withdrawn from the bladder as to clear the prostate gland, I pressed upon the stone with my left forefinger *in ano*, to guard against its slipping; it was readily brought through the next inch or two of the passage, but was resisted by the ejaculator muscle; escaping soon from this, it passed on another inch, till brought immediately anterior to the scrotum, when it would advance no further. I tried patiently for some time, using as much force as was prudent, but in vain, so I cut into the urethra with a scalpel and removed the stone, which weighed twenty-six grains, and was of the shape represented in plate i, fig. 11, No. 1. In the course of two or three weeks, I removed six other calculi, (Nos. 2, 3, 4, 5, 6, 7.) Once I brought a stone just into the urethra, but could get it no farther, the instrument slipping off it, so I was obliged to push it back again into the bladder. There being some swelling of one testis, I desisted from further attempts for a time, until this subsided under appropriate treatment, during which the incision into the urethra, just anterior to the scrotum, healed. The patient continued to suffer frequent retention of urine, from which he relieved himself by the use of a gum-elastic catheter, and at a subsequent trial I felt a stone still in the bladder and having grasped it with the urethro-vesical forceps, brought it into the membranous part of the urethra, beyond which I could not make it advance; so I was compelled, after using much manœuvering without success, to cut upon the stone in this situation; for this purpose, I pressed the stone forward with my left forefinger *in ano*, and made a semi-lunar incision on the perinæal side of the anus, cutting down to the stone, which was placed an inch and half from the surface; with a small scoop I extracted the stone through the wound; it was of the size represented in plate i, fig. 11, No. 8, a flattened oval, weighing one drachm twenty-four grains, an inch long, 13-16 of an inch in breadth, $2\frac{1}{2}$ in its larger, and $2\frac{1}{8}$ inches in its smaller circumference. Feeling another stone still in the bladder, I brought it to the wound by the urethro-vesical forceps, through which I removed it, and found it to be a little smaller than No. 8; it is represented in No. 9 of the same plate.

I have met with many instances, in which calculi have been extracted through

the urethra with this useful instrument, but no other in which so large a stone as just described, has been brought into the urethra and cut out thence by the perinæum, which is very preferable to cystotomy, because a less dangerous operation, and one that every surgeon should be prepared to try on a fitting occasion, where by careful investigation he is led to believe that the stone is of such a size as to render the attempt advisable.

CHAPTER IX.

OF BREAKING UP THE STONE IN THE BLADDER.

The period is quite within the compass of my recollection, when the suggestion of an instrument, to be introduced into the urinary bladder, with the view of mechanically acting upon a calculus and effecting its removal piecemeal, was regarded as visionary, and the account of a case in which the patient effectually operated upon himself in this way, seemed too extraordinary to gain general belief. Great changes and improvements have since then happened, resulting from the ingenuity and perseverance of many surgeons; and several hundred patients, afflicted with stone, have indubitably received a permanent cure of their disease by the surgeon mechanically grinding it away. Perhaps in no instance, in the history of our art, has ingenious mechanism been so successfully applied to the relief or cure of human maladies, as in lithotrity, or the operation of grinding or filing away the stone; still the construction of the instruments for this operation is so complicated, and so much delicacy and tact are needed for their safe employment on the living subject, that they are scarcely employed by any, save those who dedicate their time and attention almost exclusively to the undertaking. Whatever improvements, therefore, have taken place in this new branch of surgery, very few in this country have practised it to any considerable extent. I have myself little experience to state upon the subject, but cannot refrain from introducing the following case, which has been given in a different dress, and erroneously reported as a fortunate example of the practice of lithotrity.

I successfully lithotomized a man, aged sixty-nine years, employing the cutting gorget, and removing a calculus an inch and a half in length, and weighing several drachms. He quickly recovered, and remained well for about ten years; he then began again to suffer the symptoms of stone, and on sounding I readily detected one. The urine was expelled at short intervals, and often tinged with blood. The patient being at the advanced age of eighty years, I was not anxious again to lithotomize him, and I therefore introduced to him a gentleman who had witnessed much of lithotrity. It was conjectured, on a further examination, that a calculus three quarters of an inch in diameter was contained in the bladder. The three-branched *lithotriteur* of Dr. Civiale was introduced, and the stone readily felt; but owing to the small quantity of fluid in the bladder, the instrument could not be moved about freely without giving great pain, and the expanded blades failed, after numerous attempts, to embrace the calculus; blood escaped, and so much pain was experienced, that with difficulty we prevailed on the patient to let us make one trial more; this was however effected, a stone fortunately grasped, and in a few seconds reduced to small pieces, liberating the instrument, which was immediately removed from the bladder. A calculus had evidently been seized and pulverized, which I thought was of so small a size, that it might have been brought through the urethra. Small fragments passed away during the two or three following days; the patient then represented his symptoms to be much abated, and on sounding him I felt no stone; but after getting up and moving about, he experienced a return of his painful symptoms, and at the expiration of about three weeks from the operation, I again examined him, and received the same evidence of a considerable calculus being in the bladder as at the first sounding. I repeated this examination carefully at the expiration of five weeks more, and observed "that on drawing the sound towards the pubes, I felt a calculus strike its concave aspect, causing a sharp sound, audible two or three yards off the patient, whilst, on jerking the sound towards the sacrum, I felt a calculus strike its convexity, giving a dull sound;" hence I entertained no doubt of there being two calculi of different sizes in the bladder; Mr. Johnson, the Assistant-surgeon to the Hospital, was present,

and corroborated this statement. Before this examination, almost constant dribbling of the urine had come on, which persisted; rigors occurred, followed by parched tongue and feeble intermitting pulse; the abdomen became tumefied, from want of tone in the abdominal muscles, being a sufficient presage of the approaching fatal result, which happened just eighty days after the performance of lithotrity. A few hours after death, in consequence of not gaining permission to inspect regularly those organs of the body about which I was interested, I ventured to remove the entire bladder, and part of the urethra, through an incision practised in the course of the *raphé perinæi*, from the scrotum to the verge of the anus; this opening was large enough to admit my hand, and by an operation very like turning the child in midwifery I reached the kidneys, and brought them separately through the pelvis and perinæal wound; one kidney was healthy in appearance; the other presented the ordinary effects of long-continued suffering from vesical calculi—spurious hydatids in the cortical parts, dilation of the pelvic cavity and infundibula, and absorption of much of the parenchymatous substance.

I took the opportunity of examining the bladder more minutely, and the appearances it presented are depicted with tolerable accuracy in plate xix, fig. 2. Its coats were not much thickened, and the prostate gland could scarcely be considered morbidly enlarged on the external view; but on the cavity of the bladder being exposed, a tumour the size of a cherry, with a neck or narrowing at the basis, rose prominently from the left prostatic lobe into the bladder, and a similar tumour, much less prominent, was observed upon the corresponding part of the right lobe; these tumours were so placed as to be out of the way of the *lithotriteur*. Two calculi were loose in the bladder, of the size represented in plate ii, fig. 7, (a, b,) one weighing six drachms, the other one drachm fifteen grains, answering to the opinion I had formed at the last sounding, when the smaller stone, I have no doubt, lay on the pubic side of the instrument, giving the louder brisker sound, and the larger, giving a dull sound, rested towards the rectum.

In a more recent case, a patient of middle age, presenting very favourable circumstances for the attempt, I introduced the three-branched *lithotriteur*, but

failed at once to seize the stone; the patient would not submit to a second trial, but returned to me after a few months and submitted to lithotomy from which he soon recovered.

It is undoubtedly true that the lithotritic instruments with several branches, as hitherto constructed, are so complicated and so difficult of application, that very few persons, and those only who dedicate their whole attention to the art, can execute the operation with the dexterity and expedition requisite to ensure success; even in such hands we have known bad consequences ensue, as—the instrument breaking, so as to make an immediate operation by cystotomy requisite to remove the stone as well as the broken instrument from the bladder—or a prostate gland injured by the introduction of a straight instrument, which is inadmissible where that gland is greatly enlarged—or inflammation of the bladder, the result of violence inflicted and the source of fatal consequences. Such accidents and effects are however liable to attend occasionally upon every difficult and capital operation, and lithotrity ought notwithstanding to be regarded as of the highest interest to the surgeon.

It is a remark applicable to all surgical instruments, that the more simple in shape and construction they are, the better. The history of our art informs us, that all ingenious and very complicated contrivances, intended to supersede nice tact and manual dexterity in the surgeon, fall soon into disuse, if not into oblivion. No curve, no variety of parts, should be allowed in an instrument, for which an obvious and undisputed use cannot be assigned; and no apparatus gets applied extensively and for a continuance in practice, unless recommended by its simplicity.

It does appear to me, that the lithontriptic percussor, or instrument for breaking the stone in the bladder, very recently introduced to our notice, possesses all the above recommendations, and promises to be ultimately employed by most surgeons of experience, presenting only the difficulties inseparable from such an operation—uncertainty of the position in which the stone is grasped, rendering several trials necessary—embarrassment from fragments passing through the urethra—and many

reputed cures, where a relapse of the disease must inevitably take place, from small calculous portions being left in the bladder.[1]

[1] What has transpired since the above remarks were written has already proved them correct; lithontripsy, or breaking up the stone by percussion, practised first by the Baron Heurteloup, from instruments I believe constructed by Mr. Weiss, has already been found so simple and efficacious a process, as nearly to supersede all the complicated three-branched instruments for seizing and grinding down the stone in the bladder. As a description of the lithontriptic percussor, and an account of the operation, originally formed no part of this essay; and as the subject is undergoing such rapid improvement and the operation extending in the hands of the most experienced surgeons, I shall not now introduce a lengthened account of it, but reserve my remarks for a future occasion, merely stating at present, that I have made repeated trials of lithontripsy, and am so favourably impressed with its efficacy and advantages, that in any adult male patient, with a stone small, yet too large to admit of being extracted by the urethra, I should not feel justified in recommending the more dangerous operation of cystotomy for its removal, unless I failed in previous attempts to crush it in the bladder.

CHAPTER X.

OF LITHO-CYSTOTOMY, OR CUTTING INTO THE URINARY BLADDER FOR THE REMOVAL OF A CALCULUS.

Custom has long consecrated, and brevity recommends, the word lithotomy; but it seems to me more correct to apply litho-cystotomy to the operation of cutting into the urinary bladder for the removal of a calculus. In treating briefly, under a new title, a subject that has been a thousand times discussed, and received attention from more writers than any other branch of operative surgery, I should feel more than satisfied and exceed my expectations, if I could say any thing of the smallest value to those who may in future undertake to cut for the stone. I have often and keenly felt the difficulties in which the surgeon may be placed from this undertaking, and could in no way receive greater gratification, than by helping the young operator to set about this dangerous and responsible duty, with feelings as if he were well acquainted with it, and not undertaking it for the first time; but I can only say a few words on this limited occasion.

Regarding the operation above the pubes, and also by the rectum, as suited only to a few peculiar cases, and inadmissible for general adoption for the removal of a vesical calculus, I shall restrict my observations to what is termed the lateral method, distinguishing two ways of conducting it, first with the curved, and secondly with the straight staff.

Caution is the fruit of experience, and the writer who has seen and thought much, will often connect a moral with a practical lesson. How necessary is it that the operator should entertain some idea of the size of a stone, before he attempts to remove it! Where a calculus is very large, weighing many ounces, it seldom

happens that the patient's general health is in a sufficiently good state, or his bladder and kidneys free enough from disease, to render an operation advisable. At all events the surgeon ought to ascertain, as far as he can, by accurate examination and careful deduction, whether the stone be large, that he may conduct his operation accordingly. Many instances are recorded of the calculus being found, when too late, so large that it could not be removed; but I am not prepared to say what sized calculus it is impracticable to remove; I have in my possession one weighing fourteen ounces, which was operated for successfully by the lateral method, the patient living five years afterwards. The surgeon will more often have to entertain the question, whether a vesical calculus be of sufficient size to demand cystotomy. A time was fixed for operating on an adult patient; but on the morning of the appointed day, he passed the only calculus he had in his bladder, weighing a few grains, and I have it in my cabinet. During the operation, I have repeatedly known the stone so small, as to pass through the wound with the urine, as soon as the bladder was opened, escaping detection; and sometimes, where the operation has been prolonged in a tedious search for the stone, chiefly owing to its small size, it has proved to be such as might readily have been brought away with the urethro-vesical forceps.

Where the symptoms in an adult have persisted for ten or twelve months, and been severe, with great pain in the end of the glans penis or termination of the urethra, the urine voided often, and sometimes bloody after exercise, and all these troubles aggravated by exercise or riding on horseback, with concurring evidence from sounding, you may conclude that the stone is so large as to make cystotomy proper, if you decline to undertake lithontripsy.

The curved staff ought to be large enough to fill the urethra, the largest that can be admitted without great difficulty; it should be long enough to project an inch or two into the bladder, and with a deep semicircular groove upon the whole of its convex, and an adjoining portion of its straight part (plate xxix, fig. 5.) The handle should be rough, and as it requires to be suited to the operator rather than the patient, it should be large, so as to receive the thumb and two fingers. The operator, feeling the staff in contact with the stone, inclines its handle a little

to the right, that the curve may present *in perinæo* on the left side of the raphé; and satisfied with its position, he commits it to his assistant or staff-holder.

The staff-holder is the operator's main assistant, who should previously understand his views, and sympathize with him in every step of the operation. I have felt myself so dependant on such an assistant, that, preferring my fate to be in my own hands, I have sometimes wished to imitate Pouteau, by holding the staff for myself; but I have never undertaken to do so. This instrument must be held not forcibly, but lightly and as if suspended in air, since pressing it towards the sacrum to steady it, or pulling it towards the pubes, will equally tend to embarrass the operator and create mischief; it should be kept in the same relative position, in regard to the patient, as that in which it was received from the hands of the operator. Besides the danger of pressing the staff towards either rectum or pubes, its holder, in endeavouring to make its convexity prominent in the perinæum, may cause its extremity to desert the bladder, so that it reach no deeper than the prostatic part of the urethra. By the unsteadiness of the patient, the staff may be moved irregularly from side to side, or backwards and forwards in the urethra; to prevent all this, the patient's pelvis must be kept steady, and if it move, there must be a corresponding movement of the staff, that it may retain the same relative position in regard to the patient's body.

The external incision through the skin and adipose substance, down to the superficial fascia of the perinæum, should invariably be large, and be made to the full length and depth at one stroke of the scalpel, beginning a very little to the left side of the raphé, at the root of the scrotum, and continuing in an oblique direction midway between the anus and tuber ischii, passing the level of the anus near an inch. This free external incision can bring no danger; the arteries wounded are superficial, and easily secured if required; the only objection that can be raised to so extensive an incision is, that the larger wound will less quickly close; but it is well known that whenever the wound long delays to close, it is the deeper part that fails, from some cause, to heal, and not the superficial wound. By a free external incision, you facilitate all the rest of the operation, getting at the deeper parts more distinctly, and (what is of great value in operating on the

adult, particularly where large and corpulent,) diminishing the apparent depth of the neck of the bladder, by calculating it rather from the superficial perinæal fascia, than from the external surface of the perinæum.

The next or middle incision, to be made by the common scalpel, should be of much less extent than the outer incision, answering to its middle third and taking the same direction; it is intended to divide the superficial perinæal fascia, the posterior part of the accelerator urinæ, and the left transversalis muscle, baring the staff in the membranous part of the urethra, just behind the bulb; you therefore employ the left forefinger to feel for the staff, and to press the rectum out of the way, that it may not be wounded.

The third stage of cutting into the bladder with the scalpel is the most difficult, wherein you cut through the levator ani, lay open the remaining portion of the membranous urethra, and make an oblique section, outwards and downwards, of the left lateral lobe of the prostate gland, all of which you accomplish by passing the knife on in the groove of the staff, supported by the forefinger of the left hand, and by enlarging the section of these parts in the same direction, downwards and outwards, as you withdraw the knife. This third stage of the operation, I have found, from ample experience, very difficult to execute upon the curved staff, owing to its being held obliquely to present the groove favourably, and its receding from you in two directions.

The straight staff is calculated to obviate many of these difficulties, and possesses strong recommendations for a preference. It will be found an advantage to have a second handle, at a right angle with the usual one, as represented in plate xxix, fig. 1; the handle on a line with the body of the instrument serving for the operator, and the other for the staff-holder, to whom I venture to affirm it will be found very convenient, enabling him readily to keep the staff in contact with the stone, and maintain it in a fixed position in relation to the patient. The staff thus constructed and held, will follow every movement of the patient, without any tendency to displacement, so long as it is not suffered to go deeper into, nor to recede out of, the bladder.

In operating with the knife and straight staff, you execute the first and second

stages of the incision as already described.[1] The second handle is turned towards the right side, in order that the groove of the staff may be presented in the opposite direction; in doing this you find in the straight staff the great advantage of the instrument moving round its axis, and its position in the urethra consequently not altering from the median line, which I deem a very essential point. Although the urethra is naturally not straight, it readily yields so as to be made so, allowing a straight instrument to pass through it. The straight staff, in passing through the membranous part of the urethra, lifts it up from the rectum, pressing against the pubic or superior surface of the passage, thus affording great protection against wounding the rectum; the reverse happens with the curved staff, its convexity pressing towards the rectum, and rendering it not easy always to avoid wounding it. The greatest gain from the straight staff is in the facility given to the third stage of cutting into the bladder, by the instrument answering to the median line at the same time that its groove is presented in the most favourable position, and by your having to cut in a straight direction—so that, getting down to the staff, you find this third stage converted into one plain continued incision, effected by carrying on the knife in the groove, as you would carry it along a common director, till satisfied that you have gone as deep as required, passing the prostate gland and just entering the bladder; you then enlarge the incision in withdrawing the scalpel.

I prefer the common scalpel, to one with a more rounded end, as recommended by Mr. Key; and I reject *in toto* the cutting gorget, which some surgeons, it is true, have most successfully used, but which, in the hands of the generality of operators, is found to bring great peril when any error occurs, such as by its passing between the bladder and pubes, or between the former and the rectum, instead of entering the bladder, or after entering it, transfixing its coats from within outwards, all of which accidents I have known happen, and all necessarily fatal in the adult, except where the injury is towards the rectum.

In operating with the curved staff, I advise that, after having completed the sec-

[1] Mr. Key's work on lithotomizing with the straight staff, entitled "*A Short Treatise on the Section of the Prostate Gland in Lithotomy*, 4to. London, 1824," should be consulted, for the first account of this improved method of operating.

tion into the bladder, you employ the blunt beaked gorget (plate xxix, fig. 3) as a conductor, and also as a dilator of the neck of the bladder.[2] You withdraw the staff as soon as the gorget is introduced, and then pass the left forefinger upon its concave surface into the bladder, and endeavour to feel the stone; the finger, at the same time, serves to dilate somewhat the neck of the bladder. In operating, however, upon the straight staff, you withdraw it as soon as you have cut into the bladder, before introducing the finger by the wound. It is always advisable thus to introduce the finger, and to feel the stone if you can, which every operator can do with young patients, but only those who have a long finger can accomplish it in adults, as a short finger will reach scarcely to the neck of the bladder.

The forceps you select should vary in size according to the estimated bulk of the stone and age of the patient; it is requisite to select such forceps as do not meet at the end of the blades (fig. 6 of plate xxix;) when the blades close, or nearly so, they are liable to catch hold of the coats of the bladder. The inner or concave surface of each blade should be rough, but not furnished with teeth, as I have seen some forceps; for long projecting teeth are so many wedges for breaking a calculus, when the blades are pressed hard upon it. Whether you introduce the forceps upon the blunt gorget as a conductor, or without the blunt gorget, unless the deep incision has been very free, which is not always desirable, the narrowness of the deepest part of the wound affords resistance, and the forceps enter the bladder with a jerk, giving an impression by which the experienced hand knows well that the blades of the forceps are fairly in the vesical cavity: and when you find the forceps are so situated, you open their blades, and sweep the cavity of the bladder with them, by giving a quarter-turn of the instrument on its axis, and on closing the blades after so proceeding, you will, in a majority of cases, having a loose stone of moderate size to deal with, find it within their grasp, particularly if the stone have been felt with the forefinger as directed, enabling you to judge of its size and situation, and giving you a knowledge where it is to be found. Should the stone not be

2 This is the method employed with singular success by my senior colleague, Mr. Dalrymple, as well as by the late Mr. Martineau, at the Norfolk and Norwich Hospital, in which institution, the last THIRTY-EIGHT MALE PATIENTS, thus operated upon by the present surgeons, Mr. Dalrymple, Mr. Norgate, or myself, have all recovered. (November, 1834.)

thus felt and laid hold of, you next use the closed forceps as a sound, feeling for the stone in different directions, before you again open their blades; and thus you proceed with repeated trials, until fortunate enough to grasp the stone.

When the curved forceps, represented in fig. 5 of plate xxix, are required to be used, that you may be able to seize a stone placed at the *bas-fond* of the bladder, it will be found convenient to introduce them with the flat sides laterally directed, and the concavity towards the symphysis pubis, holding them at first nearly perpendicular, and bringing down the handles into a horizontal direction, as the blades pass under the arch of the os pubis; after the blades have thus reached the cavity of the bladder, you give the instrument a half-turn, directing its extremity towards the rectum, where generally it is requisite to seek for the stone; it is in aged patients, and with the prostate enlarged, that the curved forceps are required, to enable the operator to get to a part of the vesical cavity, which he is generally unable to explore with the straight forceps.

No part of the operation of litho-cystotomy requires to be done with more feeling and judgment than the extraction of the stone; the operator should do this gently, patiently, and thoughtfully, guarding against the use of more force than the living soft parts can be expected to bear without resenting the injury by subsequent inflammation, suppuration, or sloughing; without lacerating,[3] he should dilate the

[3] Pouteau, one of the most elegant writers on surgery in any country, gives the best rules I have found for extracting the stone. "L'usage sait *aplanir bien des difficultés*. . . . L'extraction de la pierre est peut-être la partie de l'opération la plus *délicate;* car elle a souvent donné naissance à des accidents mortels, lorsqu'elle n'a pas été faite avec assez de prudence et de ménagement. . . . Si on se laisse séduire par le *mérite dangereux* d'avoir fait une opération dans le moins de temps possible, la vivacité avec laquelle on fait l'extraction, occasionne un déchirement souvent mortel, et je suis persuadé que le désir inconsidéré d'acquérir cette *fausse gloire,* que le public attache à la célérité d'un opérateur, a fait périr plus de malades qu'aucune autre *mauvaise manœuvre*. . . . On ne sçauroit donc procéder avec trop de lenteur à l'extraction de la pierre; c'est sans doute à l'observation scrupuleuse de ce précepte, que je dois en grande partie *le succès constant* de mes opérations. J'ai souvent employé cinq et six minutes à l'extraction d'une pierre, que j'aurois pû tirer en beaucoup moins de temps . . . . On dégage ainsi la pierre peu-à-peu; et avec ces attentions, *peu d'efforts, beaucoup de temps et de patience,* on peut extraire sans danger de très-grosses pierres." (*Mélanges de Chirurgie,* p. 206—214.) Again, the same writer urges, as an essential precaution, "la lenteur dans l'extraction de la pierre, afin que les parties qui doivent livrer passage puissent prêter *peu-à-peu et sans déchirement.*" (*Œuvres Posthumes,* tom. iii, p. 350.)

wound, in order to bring the stone through it, pulling with the forceps from side to side, or downwards and upwards, according to the direction of the blades, by a movement similar to delivering with the forceps in a case of midwifery. If the stone do not quit the bladder, and there be great resistance, the assistant receives the forceps, and, standing over the patient as in holding the staff, pulls them forwards, still grasping the stone, as if to extract it, whilst the operator, with a curved probe-ended bistoury, cuts the resisting parts close to the stone, in the direction of the original wound, obliquely downwards and outwards, until relief is given: sometimes I have known the resisting band felt upon the stone, on the side next the symphysis pubis, and the cut made with the bistoury in that direction, or upwards. I deem it much better to enlarge the wound by a second cutting, at this part of the operation, when the size of the stone and the resistance met with prove the necessity for it, than to cut too freely at first, making a large deep wound, (which is always dangerous,) and securing a quick operation at the expense perhaps of security to the patient.

When once the stone is out of the bladder, and lodged in the wound, it is usually brought readily to the external orifice and quickly removed; but sometimes the levator ani muscle, or the pubic ligament, having been too sparingly divided, offers resistance; or the forceps slip off the stone; in either case, after using the bistoury to enlarge the wound where resistance is found, you may pass the left forefinger into the rectum and curve it beyond the stone, supporting and pressing this forward, whilst with the rest of the same hand, you still assist the right in extracting the stone with the forceps.

In recapitulating what belongs to this part of the operation, which I have attempted, however imperfectly, to describe, the best rules I can lay down are—to make the deep incision, through the prostate gland and neck of the bladder, of moderate extent, so that the forceps may readily enter—to dilate a little with the finger and forceps, before grasping the stone—to act slowly in the extraction, that the wound may still further dilate—and to enlarge the wound without hesitation, and to the requisite extent, if you find great resistance to the passage of the foreign body to be removed—thus, you will have the best chance of accomplishing a safe,

though you may fail to have a rapid and brilliant operation. The quickest operations of litho-cystotomy, in my experience, have not usually proved the most successful. The dissecting-room rule, which all young operators are ready to put in practice, of cutting freely so as to effect a rapid operation and meet with little or no resistance to the extraction of the stone, is not sanctioned by the experienced and practical teacher. Gentleness and precision ought rather to be studied than great expedition. Le Cat cut about half a dozen patients in twice as many minutes,[4] and, it is said, lost nearly all of them! At any rate, whether the operator cut much or little, let him not use the forceps boisterously, but temperately and with gentleness, for violence, if it do not produce immediate laceration of soft parts, will be sure to bring on subsequent inflammation, tumefaction and sloughing.

In children the parts at the neck of the bladder dilate so readily, and bear to be dilated so well, that if the operator can get the forceps into the bladder, and the stone be of moderate size, he may remove it safely, although the incision have failed to reach so deep as it ought; but in adults, and particularly in the aged, the soft parts will not so yield, and force applied will lacerate, creating fatal injury. The plates xxi to xxvii, with the accompanying explanations, will support this last and many of the preceding observations, and afford an instructive lesson to the young operator in this department of active surgery.

After all, it is far easier to lay down rules for litho-cystotomy, than to execute them. The failures in this operation happen too often from the surgeon not acting as he intended, and not happening to cut precisely the parts which, in a plan or lecture, he would advise to be cut; this is particularly the case in operating with the scalpel, and I have repeatedly had opportunities of observing that the knife has not been carried deep enough, the anterior part of the prostate gland only being divided, sometimes not even that—and the rest of that body and the neck of the bladder being dilated or torn for the entry of the forceps, and still further injured in the forcible removal of the stone.

[4] See his own account, *Sur la Lithotomie*, 1re recueil, p. 79.

CHAPTER XI.

SOME REMARKS UPON THE TREATMENT REQUIRED AFTER LITHO-CYSTOTOMY.

When the operation is over, a piece of dry lint is all that ought to be applied to the wound, before the patient is placed on his bed; and afterwards, for several days, no other application is requisite or even proper, provided the edges of the wound remain moist and no tendency is present for a scab to form upon them. This treatment, with frequent washing and removal of the draw-sheet, keeping the patient as dry and clean as possible, may be continued from five to twelve days, or until the tumefaction of the perinæum, which arises in a day or two after the operation, has subsided. No means should be at first employed to close the wound,[1] beyond bringing the knees close together, it being right to regard the wound as a necessary channel for the urine, clots of blood, or calculous fragments. The first favourable sign is the urine flowing freely through the wound; should it not do so within a few hours after the operation is completed, and should the patient have uneasiness in the region of the bladder, which is felt distended above the os pubis, the finger must be introduced through the wound, as a guide for a gum-elastic or silver female catheter, which may remain to conduct off the urine; this attention is usually required within six or eight hours after the operation, and frequently the hollow instrument introduced, needs to be left in the bladder for a few days—but

[1] In a paper by Mr. Crichton, inserted in the *Edinburgh Medical and Surgical Journal*, vol. xxix, p. 229, immediate closing of the wound and application of pressure are recommended, with a view to effect union by the first intention.

I cannot approve the practice, advised by some eminent surgeons,[2] of introducing a canule *à demeure* in every case, which, resting at the neck of the bladder, must create vesical tenesmus, by acting as a foreign body in place of the calculus removed, and tend thereby to the production of inflammation of that organ.

When the tumefaction of the perinæum has subsided, the wound may receive an unguentous lint dressing, suited to its particular state; if dull, to be dressed with red ointment, if fast granulating, to be touched with *argenti nitras*:—and when, at a later period, a part of the urine flows by the penis, and that which flows by the wound is clear, without admixture of pus, and voided without pain, (shewing the absence of those indications by which you judge that a large internal wound, or an urinous cavity remains,) it is allowable to put a strap of adhesive plaster across the buttocks, and compress the perinæum with a T bandage, in order to expedite the closing of the wound; unless however the urine continue to flow, not only freely, but without pain, by the penis, all pressure does harm and should be remitted till a later period; but this subject of pressure, and many other points connected with the after-treatment, are matters of such nice discrimination, and are pregnant with such a variety of influential circumstances, that I feel unable to lay down brief general rules, and should prefer to communicate what I think I know of any value, by a detail of numerous cases.[3]

Children do so well after litho-cystotomy, if tolerably performed, that they require less attention and less dressing than patients after any other capital operation; the remarks contained in this chapter, unless otherwise specified, are therefore to be considered applicable to adults, where the after-treatment is of the greatest value, from the numerous evils liable to arise, demanding the most acute observation for their early detection, and vigorous timely measures for preventing their progress; upon the principal of these evils I can in this stage of an already prolonged treatise make only a few cursory remarks.

Inflammation of the bladder seldom arises after litho-cystotomy, that organ

[2] See *Mr. Liston's Paper on Lithotomy*, in the same volume of the *Edinburgh Medical and Surgical Journal*, p. 236.

[3] See *Appendix*, *No.* 1, containing cases of litho-cystotomy.

being satisfied to have gotten rid of its offending inmate; the surgeon should however take care that it is not present when he undertakes the operation; and when it is detected, after the operation, by the acute pain in the viscus and tenderness on pressure upon it, active local and general antiphlogistic treatment should be adopted. In a case of this kind, which proved fatal, unattended by peritonæal inflammation, vomiting came on in addition to tension and great tenderness above the pubes, and the bladder on dissection was found particularly vascular and red in its inner membrane.

Infiltration of urine, with diffuse inflammation of the reticular texture, is, I believe, the most frequent cause of a fatal termination after litho-cystotomy, and is often so insidious in its approach, and accompanied by so little pain, that the less experienced surgeon does not know that the patient, who expresses himself cheerfully and entertains the brightest prospects of recovery, is not doing well, at the same time that his trembling manner and quick small pulse presage death to be near at hand. I have known a patient sitting up whilst his bed was adjusting, taken faint, and dead in half an hour, where nothing on dissection was found to explain the event, but extensive suppuration of the reticular texture about the neck of the bladder and pelvis. This diseased state happens usually in parts so deeply situated, and suppuration of the reticular texture is so rapidly produced, that effectual treatment can rarely be adopted. Antiphlogistic treatment, particularly local and general bleeding, can be of no avail, unless adopted within a few hours after the first commencement of the morbid action; and the parts in which the disease is situated are usually so deeply seated, about the neck of the bladder, that treatment is seldom practised with good effect. When taking place in superficial parts, as in the perinæum and scrotum, I have treated it successfully by timely free incisions; but infiltration with diffuse reticular inflammation usually happens about the neck of the bladder, and within the pelvis, extending quickly up the loins, as high as the kidneys, and even to the diaphragm; it may be accompanied by little pain, and the pulse at first is not much quickened, the patient being cheerful and anticipating no evil, until the tongue gets dry, parched, and brown, the pulse rapid, feeble and intermitting, and the patient sinks with very little suffering from pain,

though much sometimes from an indescribable distress. The patient may die, from this cause, within four or five days after the operation, or he may live ten or twelve days, sometimes even several weeks, where matter and sloughs find an outlet by the wound, and the strength is supported by generous diet and by the avoiding of reducing treatment. Free bleeding is a destructive proceeding; it can never be adopted at the early, incipient stage of the disease, when alone it could avail, and when once suppuration has taken place, bleeding quickly reduces the already exhausted powers.

Sometimes peritonæal inflammation is conjoined with diffuse inflammation of the reticular texture, and the management of the case under these circumstances must be conducted with reference to the latter condition. This complex case is embarrassing to treat, usually proving fatal; and depletion by bleeding will expedite this result. As a separate malady, unaccompanied by urinary infiltration and diffuse reticular inflammation, peritonitis is, according to my experience, not frequent; it is known by the usual signs, and commences in the vicinity of the bladder, where the pain is first felt, spreading thence over the rest of the peritonæal surfaces; the most active antiphlogistic treatment, by bleeding, low diet, fomentations, and counter-irritation, are required, and if promptly and early practised, will arrest the disease. In children, who are rarely sufferers from diffuse reticular inflammation and urinary infiltration, peritonitis occurs, and yields to active treatment, particularly leeching freely the abdomen; but in the aged, urinary infiltration and reticular inflammation and suppuration, are frequent in comparison with unmixed peritonitis; the surgeon seldom has to treat the latter, and when the combined diseased action is present, I must repeat that general bleeding and purging sink the powers, without arresting the malady, and should be very guardedly undertaken by the surgeon. The impossibility of introducing detailed cases in explanation and support of what I have stated, leads me into a proceeding different to what I intended on commencing, by giving opinions instead of facts.

Patients die after litho-cystotomy, from nervous exhaustion, unconnected with loss of blood, or with any of the preceding morbid conditions. A tympanitic state of abdomen, with a feeble and easily compressed pulse, supervenes in adults, parti-

cularly in the aged, a few days after the operation, unaccompanied by pain, or the signs of peritonitis. Opiates are indicated, with good nutriment, sometimes administered by lavement, where the stomach is disinclined to receive it; and even stimulants are required; but bleed and blister in such a case, or omit to supply nutriment and stimulus, and the patient will have no chance of living. Danger is always to be apprehended, when such symptoms of nervous debility arise; but I have known recovery from the treatment recommended, where the abdomen was tympanitically distended, the pulse intermitting, and a troublesome hiccough present for several days.

The perinæal opening is often slow to heal after the operation, and one cause of it, I have found to be the feeble and reduced state of the patient, who with a lapse of a little more time, generous diet and fresh air, has recruited in bulk and spirits, and quickly recovered. If the wound be patulous and a granulating surface present, a gum-elastic catheter may be introduced by the urethra and retained there; the urine passing through it and no longer by the wound, allows the latter to close. But there is much room for consideration before such a practice is adopted, and it is always pregnant with the one objection of expanding the urethra at the part where the wound is situated, and so far interfering with its cicatrizing. I do not consider the urine passing through the wound as the cause of its not healing, and advise the surgeon to look for some other. If, on the urine passing, there be pain, and matter escape from the wound, there is an unhealed cavity at the neck of the bladder, and it would be in vain to close the outward opening by pressure; and if the gum-elastic catheter be introduced into the bladder, and left in the urethra, great care must be observed in so doing, lest it get into the urinous cavity instead of the vesical.

When the perinæal opening is become very narrow, and is truly fistulous, by being lined with a cuticular membrane, if there be no sign of a larger and deeper cavity at the neck of the bladder, caustic may be applied to the fistulous orifice, the *argenti nitras*, or nitric acid; and if still unsuccessful, you should employ the actual cautery. It is however in vain, and therefore improper, to have recourse to these measures, unless by observing the discharges from the opening, and examin-

ing by the probe, you have satisfied yourself, that there is no larger cavity at the neck of the bladder.[4]

In operating with the curved staff the rectum is liable to be wounded. Amongst numerous operations I am aware of having only once met with this accident; but I have many times seen it occur. The wound produced by the knife is constantly situated just above the sphincter ani, communicating with the membranous part of the urethra, and unless very small, the fœces, when soft, pass through it; and the urine passes into the rectum, of whatever size the opening. The rectum is so contiguous to the urethra, that an opening may occur subsequent to the operation, from sloughing resulting from violence, or from ulceration in a bad constitution.

When the wound made by the knife is small, and the urine finds a free passage by the perinæal opening, healing will sometimes occur spontaneously, the motion being kept solid and purging avoided. I once knew the wound of the rectum heal spontaneously a year and three quarters after the operation; in this case the perinæal wound had closed early, a recto-urethral fistula only remaining: this is the simpler case to treat, and by use of the speculum ani, the opening may be seen, suture applied after paring off the edges, or lunar caustic, nitric acid or actual cautery. Treatment by these means is likely to be successful only where the opening is small; where large and attended by loss of substance from sloughing, it has as far as I know proved incurable. (See plate xxvii, figs. 1 and 2.)

Where the perinæal opening also remains, forming a recto-perinæo-urethral fistula, dividing the verge of the anus, by an incision including the parts between the two openings, has been recommended;[5] I once succeeded by this method; in another case the perinæal opening only was closed by it, the communication between the rectum and urethra remaining. In a third case, a very emaciated subject, the parts all healed ultimately, after this procedure, on the health improving by country air and generous diet, so as to restore the wonted bulk and powers of the system.

A wound of the rectum, though it rarely endangers, makes life very burthen-

[4] See also *Appendix*, *No.* 1, of cases of litho-cystotomy.

[5] This plan has been suggested by my earliest instructor, Sir Charles Bell.

some, and is a distressing evil. One of its bad consequences is its disposing to a relapse of stone in the bladder; this is so true, that few with a recto-urethral fistula after litho-cystotomy escape a relapse; and when the operation is repeated for the second stone, it has cured the fistula left by the first. I have seen more than one such case, and read of many; whence we derive the suggestion of making an incision, similar to that of litho-cystotomy, to cure the ancient fistula.

I omitted to observe in its proper place, that in employing a suture for a recto-urethral fistula, which is brought into view by use of the speculum ani, I have endeavoured to facilitate the approximation of the edges, and give less interruption from the fœces passing, by dividing the sphincter ani; a detail of the case only could explain all the motives and advantages of this operative proceeding.

CHAPTER XII.

OF HÆMORRHAGE AFTER LITHO-CYSTOTOMY.

This is one of the earliest evils the operator meets with, and is productive of the greatest anxiety, because he feels himself in some measure accountable for its occurrence. The causes of hæmorrhage after this operation are however various, and not always avoidable. A very narrow pelvis and contracted perinæum will bring danger of wounding arteries of considerable size, in making an incision of proper extent and in the most eligible direction; or arterial branches, such as are of small size usually, and such as cannot be avoided, may be so enlarged in particular cases, as to furnish an alarming bleeding; an unusual distribution of the arterial trunks about the neck of the bladder[1] is a third source of hæmorrhage for which the surgeon should be prepared. But the supervention of hæmorrhage, after litho-cystotomy, most often depends on the incisions into the bladder not being practised exactly where intended by the operator and directed by the anatomist, whence vessels are wounded which are always large and regular in their distribution, and which ought to have been avoided. I can say little of hæmorrhage from particular diathesis of the patient, having never known a case of the kind; still it may no doubt occur, as we find it happening after other less serious operations, in those persons, the quality of whose blood and defective living powers of whose vessels, prevent the closure and stopping of the smallest divided arterial branch.

Hæmorrhage may be either venous or arterial; the former very rarely affords ground of alarm, and may always be arrested, when the operation is finished, by

[1] My friend and associate, the late Mr. John Shaw, met with a fatal case of hæmorrhage, from the wounded artery taking an unusual course over the prostate gland.

moderate pressure and recumbency. But in aged calculous patients, the veins about the bladder, prostate gland and rectum, are often very varicose; and in a feeble system, an abundant loss of venous blood, with some arterial, may sink the patient's powers, and even prove fatal. In a gentleman much troubled with piles, on whom I operated in his seventy-seventh year, removing two large calculi weighing nearly three ounces and a half, there occurred profuse loss of venous blood, with little of arterial, whilst he was on the table; bleeding, principally venous, continued after he was placed in bed, till at length I introduced a gum-elastic canula, and around it plugged the wound with lint; but the patient was already faint, and lay for some time torpid, with a fluttering, scarcely perceptible pulse, and a clammy moisture of the skin, during which wine was poured down freely and warmth applied to the limbs, with a glimmering of hope that he might rally; after three or four hours, and when all hope seemed past, the living powers began to increase, and there was a favourable recovery: this happened about four years ago, and the aged gentleman still lives and is in health.

Arterial hæmorrhage principally claims our attention, and may be advantageously considered in reference to the three stages of cutting into the bladder, which I have described in a preceding chapter. Vessels in the adipose substance often spirt in the first incision, and should be stopped generally by the assistant, without the operation being delayed; they soon contract and give no farther trouble. In operating, however, upon a very feeble or aged patient, it may be proper, (and I have both done and witnessed it,) when an artery thus spirts briskly and with a whizzing noise, to tie it before proceeding further.

It is in the second stage of cutting into the bladder, between the division of the superficial fascia and opening the urethra upon the staff, that the operator sometimes wounds arteries of such a size, as to excite alarm, and require immediate attention. As the left transversalis muscle must be divided, when an arterial branch of considerable size runs in the direction of it the knife will unavoidably cut it across; but usually, although blood spirts, no trouble is occasioned, and the surgeon may proceed to finish the operation: the necessity of securing such a vessel must be determined by the quantity of arterial bleeding going on after the

patient is in bed. A little bleeding in patients of good stamina should not excite alarm; I have known often from half a pint to a pint of coagulated blood on the sheet when first drawn, after the patient has been some time placed in bed, and no harm ensue. A moderate bleeding in strong plethoric subjects is indeed a great security against subsequent inflammation. It is the quick escape of fluid arterial blood from the wound, its being renewed instantly when removed by the sponge, and this occurring a few hours after the operation, that should be regarded as indicating a degree of hæmorrhage requiring the surgeon's interference for arresting it.

If the hæmorrhage be rapid and alarming, the wound should be exposed, in a good light, with a view to discover the bleeding vessel and put a ligature upon it, which is the most secure and least objectionable of all proceedings, and the object always to be aimed at when a spirting artery is observable some time after the patient is in bed. Spatulæ are employed to keep open the wound, and small sponges placed upon a stick, as represented in plate xxix, fig. 8, will clear it out at the greatest depth required, much facilitating the discovery of the bleeding orifice. The tenaculum, more often than the forceps, will assist the surgeon to secure a bleeding vessel at the depth I am now referring to. Should it not be found practicable to apply a ligature, a gum-elastic canula may be introduced into the bladder through the wound, and the latter be plugged up with dossils of lint, placed around the canula, beginning as deep as where the bleeding arises, and accumulating the dossils till they are on a level with the perinæum. In all cases where plugging is had recourse to, the surgeon cannot relinquish apprehensions of the patient's doing ill, even though the hæmorrhage be checked.

In an aged gentleman, from whom I removed four calculi, by cystotomy after the lateral method, there was a brisk stream of arterial blood furnished from the wound, two hours after he had been placed in bed; and as I could not, on exposing the wound and turning out the coagula, detect the bleeding orifice for the application of a ligature, I stopped the hæmorrhage by pressing, for a quarter of an hour, the left internal pudic artery against the ramus of ischium. I then introduced a gum-elastic tube by the wound into the bladder, (drawing off four or five ounces of dark urine,) and inserted dossils of lint, supporting the perinæum by a T band-

age. The bleeding did not recur, and the patient went on seemingly well for a day or two, the urine flowing freely through the canula; but three days afterwards, the body became tympanitically distended, without pain or tenderness on pressure, and the pulse very feeble. Hot fomentations were applied, good animal broths and diluted wine also given, notwithstanding which the patient died eight days after the operation. Dissection proved the entire absence of peritonæal or other inflammation, as well as of urinary infiltration and suppuration. The whole of the colon, more especially its caput, was immensely distended with air; the stomach and small intestines were only moderately distended; to the most prominent part of the over-distended caput coli, the omentum was attached by recently effused lymph, and on being separated, a distinct round hole, the size of a split pea, was exposed in the coats of the bowel, through which fœtid air escaped; this opening had been produced by sloughing or ulceration, so that the contents of the bowel were only prevented from escaping into the peritonæal cavity, by the adhering omentum. The inner surface of the colon, near this part, exhibited several ulcerated spots; the parts concerned in the operation are shewn in plate xxvi.

I may repeat that plugging the wound is always to be had recourse to with reluctance; although it may arrest the bleeding, the well-doing of the case may be interrupted, the regular flowing of the urine being prevented, and pain created, endangering inflammation of the reticular texture, and peritonitis. In every case where plugging is called for, the operator may with good reason apprehend some untoward symptoms.

Two considerable arteries, one from each side, enter the corpus spongiosum at the bulb; these vessels lie near each other, and either or both may be wounded. This accident happens most often to the left branch only, and there is very active hæmorrhage; the bleeding vessel being accessible to the view, it should be secured by a ligature. In one case, where a troublesome arterial bleeding occurred at the bulb, it was stayed by compressing the right internal pudic artery on the ramus of the ischium, which was found practicable through the wound; hence it seemed that the operator had wounded the artery of the bulb on that side, whilst the left branch had escaped.

I have repeatedly seen the corpus spongiosum at the bulb wounded, and sometimes distinctly laid open to view, by an operator who was accustomed to cut too high, going directly down to the staff where he could readily feel it; and yet no serious hæmorrhage ensued. The wounded corpus spongiosum is secured by pressure and dry lint, and does not furnish an alarming bleeding, if the arterial branch be not divided before entering the bulb.

A healthy boy, four years old, was lithotomized by the lateral method, with the scalpel and curved staff, and a small calculus removed with sufficient expedition. An hour and a half after the operation, the patient was cheerful, comfortable, and with cheeks florid as in health; an ounce or two of coagulated blood were on the draw-sheet at the first remove. In five hours, the responsible attendant on the spot, an intelligent surgeon, communicated that there was some bleeding going on, with swelled perinæum and rather pallid cheeks; but he took no alarm. I proceeded to the patient's residence, but before I arrived, the surgeon on the spot had been summoned up stairs by the nurse and found the child just expired when he got to the bedside. The parts removed are exhibited in plate xxi, fig. 1. A wound of the bulb, and of the left arterial branch entering it, explained the source of the bleeding, which I believe to have been the cause of death, the hæmorrhage going on slowly between six and seven hours. Had alarm been taken, the wound might have been exposed and the open artery secured by ligature; even pressure might have proved adequate to arrest the bleeding; or had a little stimulus, as well as nourishment, been given at the critical time, when the exhaustion induced had proved just sufficient to stop the bleeding, the powers of the system might have rallied and life been restored.

The above is an unusual example. Fortunately young children rarely suffer from hæmorrhage; the arteries having great powers of contraction, hæmorrhage even from considerable branches stops spontaneously, the sides of the wound readily uniting. When however hæmorrhage does occur in young patients, it is badly borne, and even a slight bleeding, long continued, may induce fatal syncope.

To return to hæmorrhage in adults, to which all my remarks on this subject, except otherwise stated, are to be considered as applying—I have found, and known

practised, that for a moderate loss, still enough to require interference for checking it, if the finger, introduced into the wound and curved so as to press the internal pudic artery against the ramus of ischium, stops it, such pressure may be continued for several hours, and the loss of blood successfully restrained.

The internal pudic artery itself may be wounded in the third stage of cutting into the bladder, and such an accident is attended with a rapid loss of arterial blood, which, unless soon checked, would prove fatal; the vessel must be secured by a ligature, for no other means, in my opinion, than a direct ligature, will answer the purpose; and where the artery is divided quite across, a ligature above and below the division will be needed, in order effectually to command the hæmorrhage.

In the case of a gentleman, sixty-two years of age, of very irritable habit, there was a great arterial hæmorrhage, so that I calculated that a pint and a half of arterial blood was lost, in the delay of extracting several calculi, before the ligature was applied. The situation of the bleeding vessel was near the left ramus of pubis and ischium, half an inch from the commencement of the *erector penis*, which muscle was clearly exposed; the blood flowed from a tube nearly as big as a crow's quill. Having made a very large external incision, I had no difficulty in seeing the spot whence the blood issued. I inserted a small tenaculum into the spot, and tied a ligature upon the part so held, when the bleeding immediately ceased and did not return. On the evening of the following day, there was vomiting and hiccough, and the abdomen was prominent and distended with air, more especially in the region of the stomach and arch of the colon; there was neither pain, however, nor tenderness on pressure. The hiccough continued, the vomiting ceased, and urine flowed well through the wound; but the tongue became parched, pulse rapid and feeble, and death ensued five days after the operation. There was no inflammation of either peritonæum or any other structure, nor infiltration of urine, and I could only account for the fatal result, by the loss of blood, and the shock of the operation upon the nervous system of a most sensitive and irritable patient. The bladder and its appendages are represented in plate xxv, shewing the left internal pudic artery opened, but not cut across, on the aspect nearest to the wound, which accounts for a single ligature, applied by the aid of a tenaculum,

stopping the bleeding. A *divided* artery of this size would require a ligature upon each orifice.[2]

I deem the internal pudic artery to be always accessible to a ligature, by means of a small curved needle, describing the third of a circle an inch or rather more in diameter, where the external wound is ample; and for an active arterial bleeding, which is stopped by pressing this artery, the surgeon may be driven to take such a course, as happened to me in the following case. This is tying the main trunk for a bleeding orifice at some distance, which is only to be had recourse to, where you cannot tie the open orifice direct.

John Bean, ætatis 56, had ædema of the legs and was in bad health, having a pulse at ninety, on account of which I deferred the operation a few weeks; when he had a little improved, I performed it, carrying the scalpel on so as to divide the prostate gland and neck of the bladder. One superficial artery started, upon which, on account of the feeble state of the patient, I put a ligature. A stone weighing nearly half an ounce was extracted. Within an hour, and before I left him, there was arterial bleeding to the amount of ten ounces, proceeding from the deepest visible part of the wound when I opened it to the utmost. I plugged the wound, but the bleeding continued, and at the expiration of three hours, the patient was cold, pallid, and exhausted, with a small and most rapid pulse, above one hundred and thirty in a minute. The bleeding orifice was not accessible, and arterial blood still flowing briskly, I opened the wound freely, cleared the bladder of coagulum by passing in my finger and the scoop, and then succeeded in putting a ligature on the left internal pudic artery, where it lies on the inner surface of the ramus of ossa pubis and ischii, by means of a small and very curved needle; the

2 Dorsey (*Elements of Surgery*, vol. ii, p. 190, 3rd edition,) gives a case in which Dr. Physic wounded the pudic artery with the gorget, and tied it with a ligature and curved tenaculum; he also recommends a small curved needle, held by a pair of forceps. (Plate xxi.) Mr. Abernethy mentions having tied the wounded pudic artery in the same situation as we compress it to stop the hæmorrhage. (*Lond. Med. and Phys. Journal*, vol. ix, p. 393.) An interesting paper, on hæmorrhage after lithotomy, is inserted in vol. iii, p. 292 of the *Quarterly Journal of Foreign Medicine and Surgery*. In a patient æt. 57, bleeding went on till pulse became imperceptible; the wounded pudic artery then tied and a cure in thirty-three days. (*Castéra Diss. sur les Accidens qui compliquent la Taille*, p. 48.)

bleeding was instantly stopped and did not return. In the evening the pulse were one hundred and twenty; there was sickness but no vomiting, and the urine flowed scantily by the wound. Next day the abdomen was quite tympanitic from distention of the hollow viscera, particularly the stomach and colon; the distention became so great in the course of the day, as to press up the margin of the ribs, and create short breathing; a feeling constantly of wanting to pass motion was also present, but no other pain or uneasiness. I gave cathartic pills and applied warm fomentations; next day I directed a glyster, which succeeded; pulse varying from one hundred and twelve to one hundred and twenty, tympanitic state diminished, and urine flowing freely. After this, all went on improving—the pulse abated in frequency and increased in strength—cheerfulness of mind, like sunshine bursting through thick clouds on a dull day, came shortly afterwards—the superficial ligature separated in five, and that on the internal pudic artery in nine days; and after the tenth day all urine passed by the penis; the health was quickly restored, and the perinæal superficial wound healed gradually without any interruption.

When an arterial branch is wounded in the third stage of the incision into the bladder, and is situated deeper than the levator ani, either just on the inner surface of this muscle, or even on the face of the prostate gland, the orifice is I consider quite inaccessible to the view, and a direct ligature cannot be applied: it will be right to compress the left internal pudic artery and observe if the bleeding be restrained by your so doing; but commonly an artery, thus deeply situated, does not branch off from the internal pudic, beyond the spot where the pressure is made; it may have quite a different course and another origin; and if the bleeding be therefore not restrained by pressing the internal pudic against the ramus of ischium and pubis, it would be in vain to put a ligature upon this vessel, and the only remaining resource is pressure in the deep part of the wound.

When the bleeding has this deep origin, plugging the wound with lint around a hollow canula may be attended with bad consequences. You may stop the bleeding through the wound, but, the plugs not being driven deep enough, and not applied directly upon the bleeding orifice, the hæmorrhage continues and the

blood gets into the bladder, which is known to happen, first by the state of the patient, who suffers from the loss—secondly by pain and distension of the bladder, and by fluid arterial blood flowing through the penis or through the canula. The blood may coagulate in the bladder, and if accumulated in large quantity, although the hæmorrhage cease, an embarrassing state of things is present, the urine not being allowed to flow through the canula. A syringe connected with the outer orifice of the canula, acting powerfully, will draw the coagulated blood through it and clear the bladder; but in doing this there is risk of the bleeding being reproduced. To make pressure in the deep part of the wound, under the state of things now considered, a hollow canula armed with compressed sponge may be introduced into the bladder, when the sponge, expanding from moisture, will act upon the surfaces required to be compressed: but all pressure, in such a deep situation in the pelvis, brings danger, and makes a serious case, creating apprehension of collateral bad effects—infiltration of urine, diffuse inflammation and suppuration: the fortunate circumstance is, that the cases requiring it are rare, particularly those arising from an extraordinary distribution of arteries at the neck of the bladder. It not unfrequently happens that some degree of bleeding takes place into the bladder; the urine, tinged as it flows, shews this; sometimes the bleeding is considerable, and yet there may be no ground for alarm, nor any alarm entertained. I knew a gentleman evacuate from the bladder a coagulum of five or six ounces of blood, through the wound, six days after the operation, with great straining and pain, after the manner of a woman in labour, and afterwards all went on well.

Of hæmorrhage from the divided prostate gland, or from the injured lining membrane of the bladder, I apprehend, though some degree may take place, it cannot be said that it ever is in quantity to prove serious, making it necessary to entertain here the means by which hæmorrhage from such a source should be arrested.

In old writers upon lithotomy it is surprizing to see the account of secondary hæmorrhage, occurring a week or two after the operation, on the separation of sloughs, proving the violence done in the operation. If we see no hæmorrhage in the first six or eight hours, we do not now feel much risk of its occurring, owing

I suppose to the greater gentleness and better method with which the operation is performed. In two or three instances only, have I known bleeding to a considerable extent take place between a week and twelve days from the operation; one occurred in a little boy four years old, and all did well without the surgeon's interference: to open the partly healed and greatly diminished wound, with the neighbouring soft parts swollen, tender and inflamed, is impracticable at such a period; and so little chance is there of seeing the orifice of a bleeding vessel, that you are limited to making pressure in the wound.

In summing up this essay, at the close of the last of its chapters, I need not, I trust, explain the motives which have led me to state, so honestly and freely, whatever of untoward occurrences have happened, either in my own actual practice, or in the proceedings of others under my observation. To boast of uniform success in any capital operation, is not the dignified course of a surgeon, any more than that the physician should quack of universal cures. Experience in lithotomy, like victory in battle, is seldom gained, without counting a certain number of slain.

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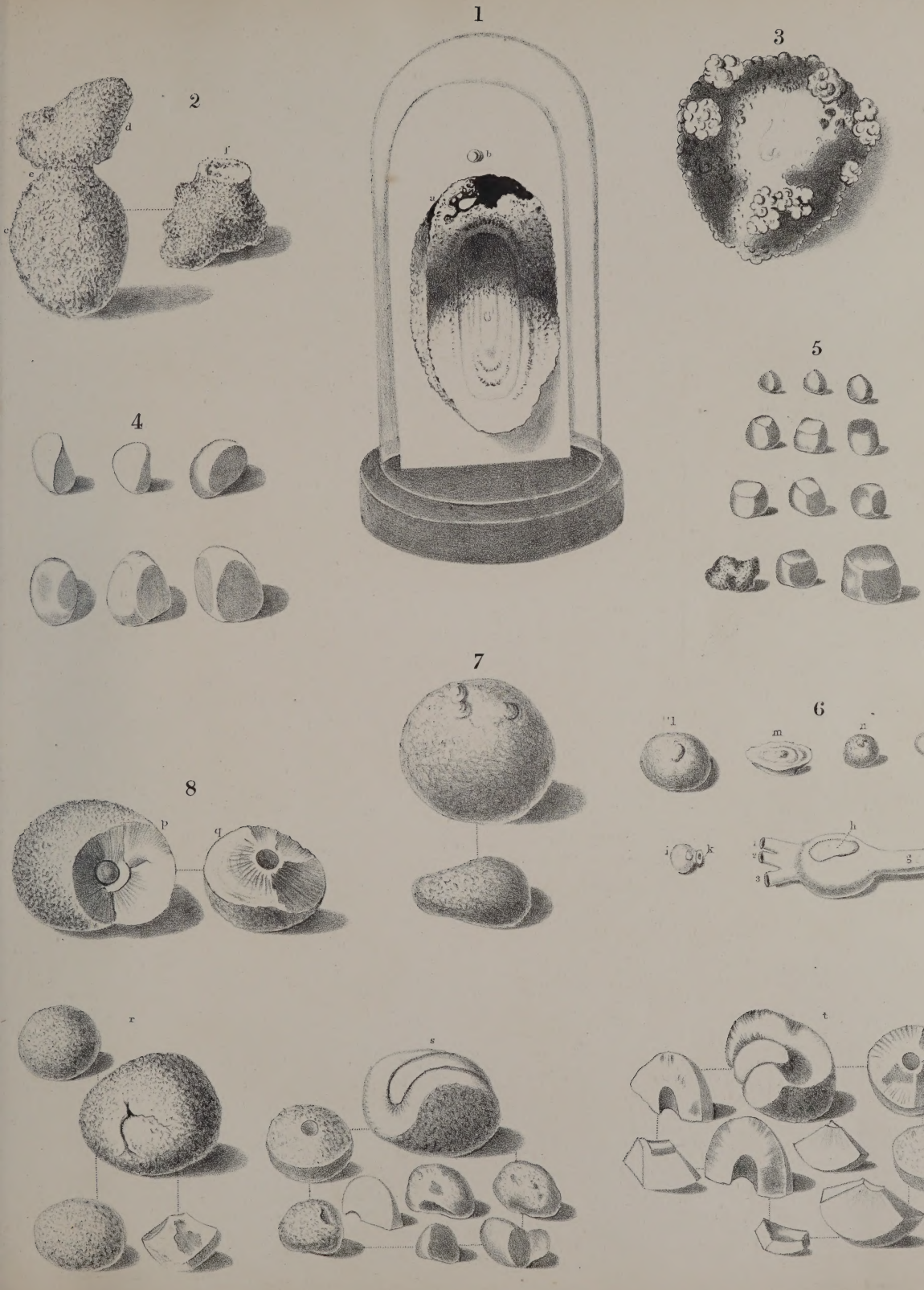

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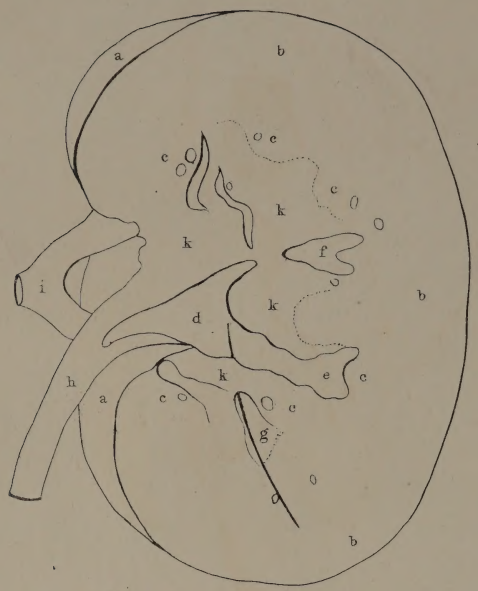

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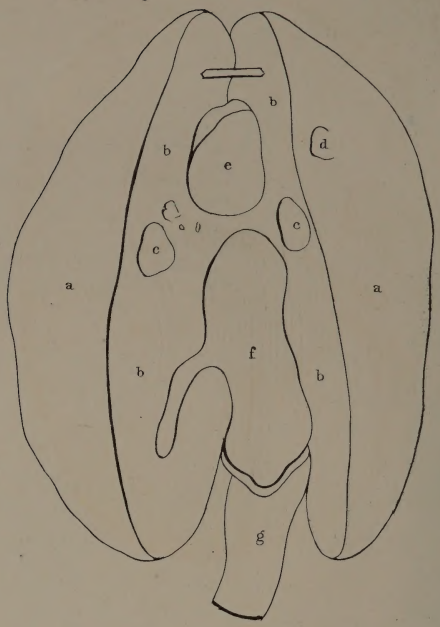

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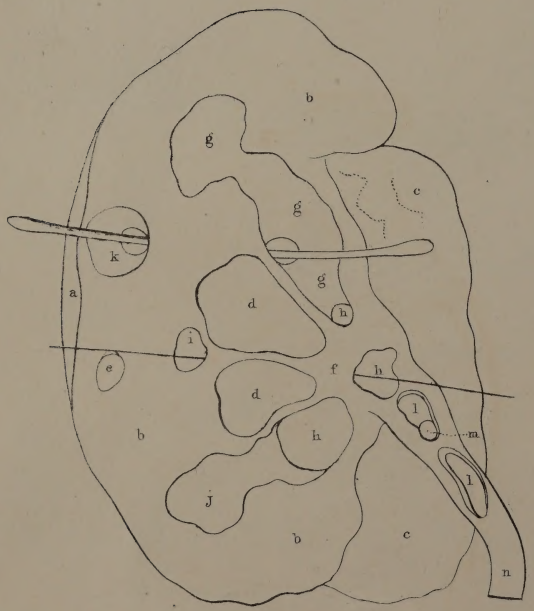

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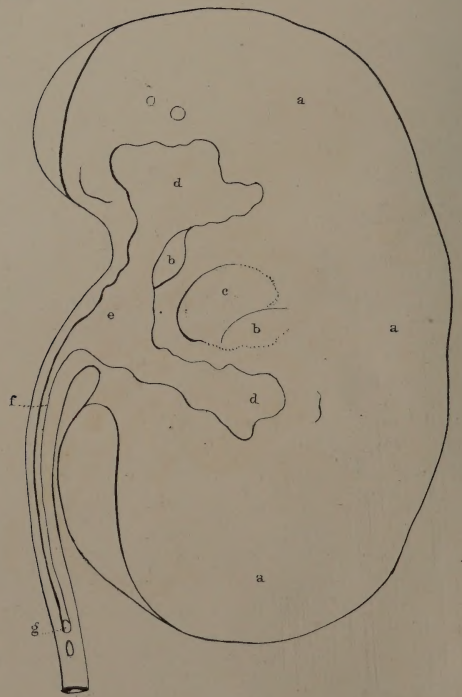

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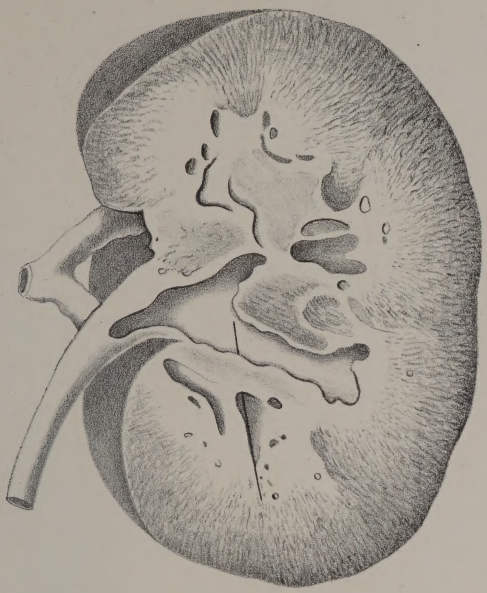

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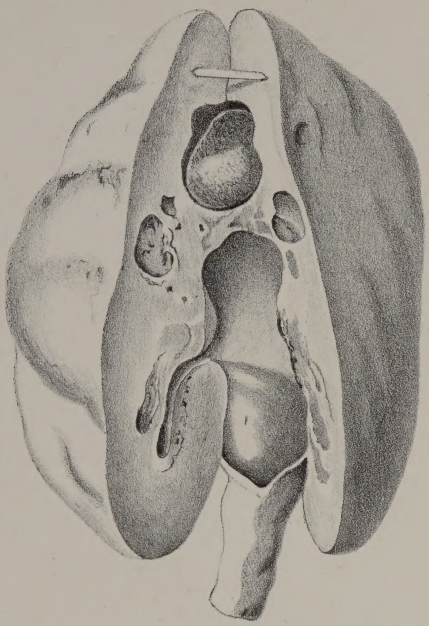

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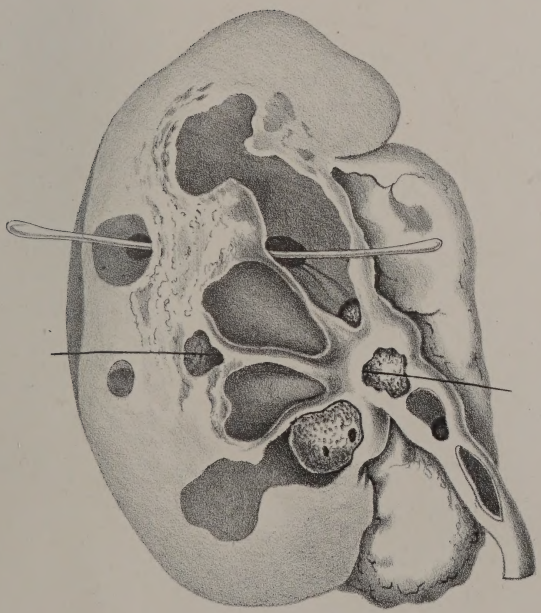

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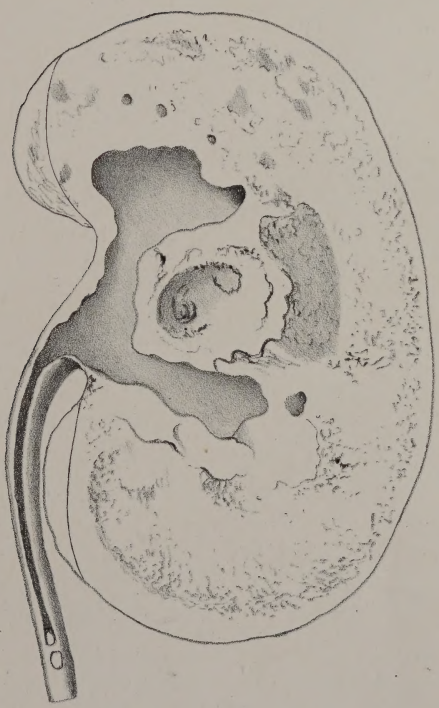

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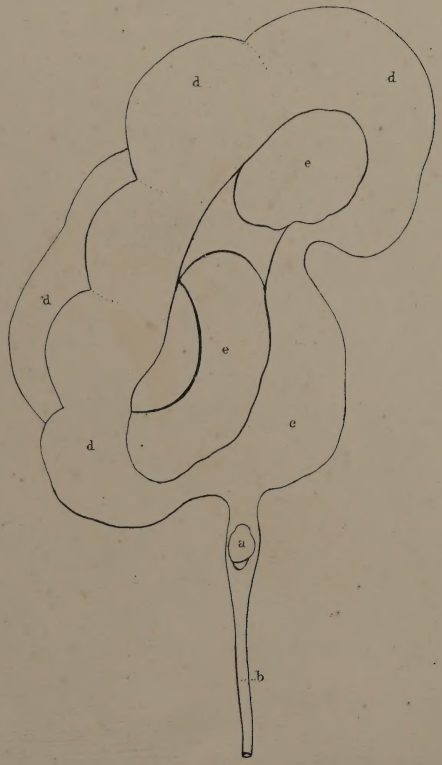

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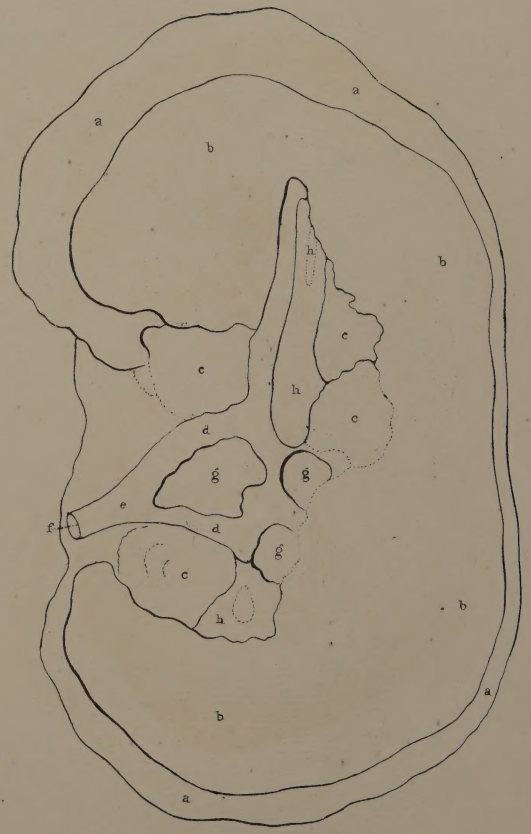

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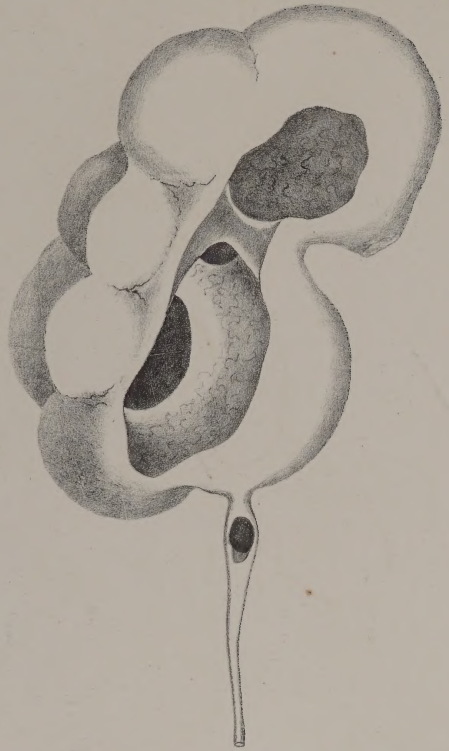

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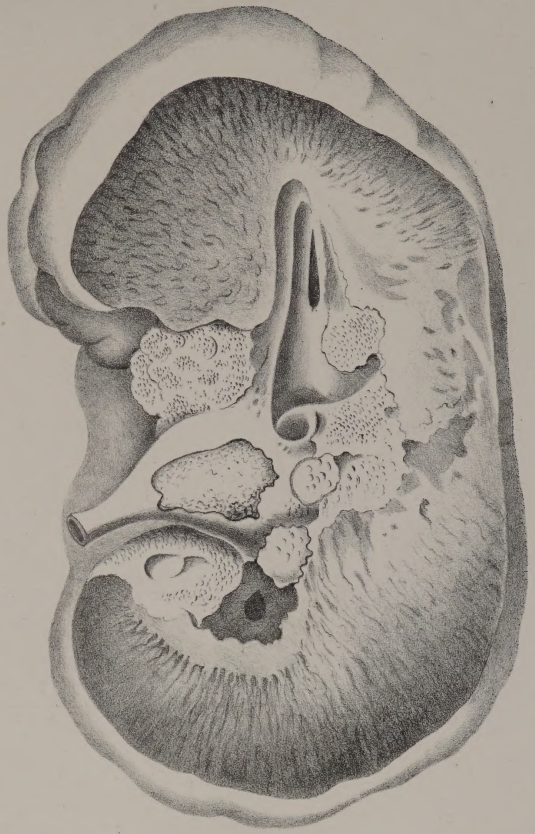

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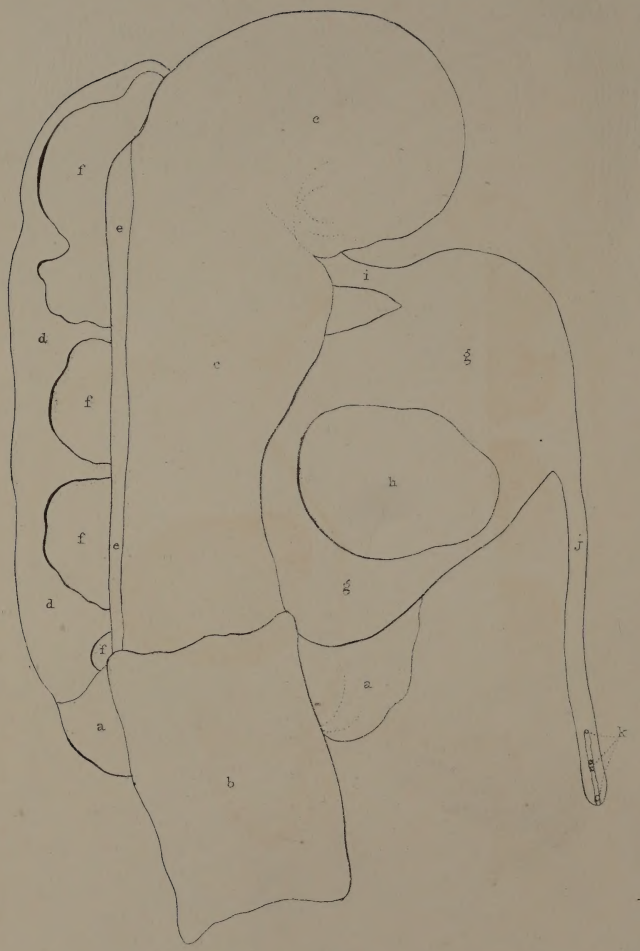
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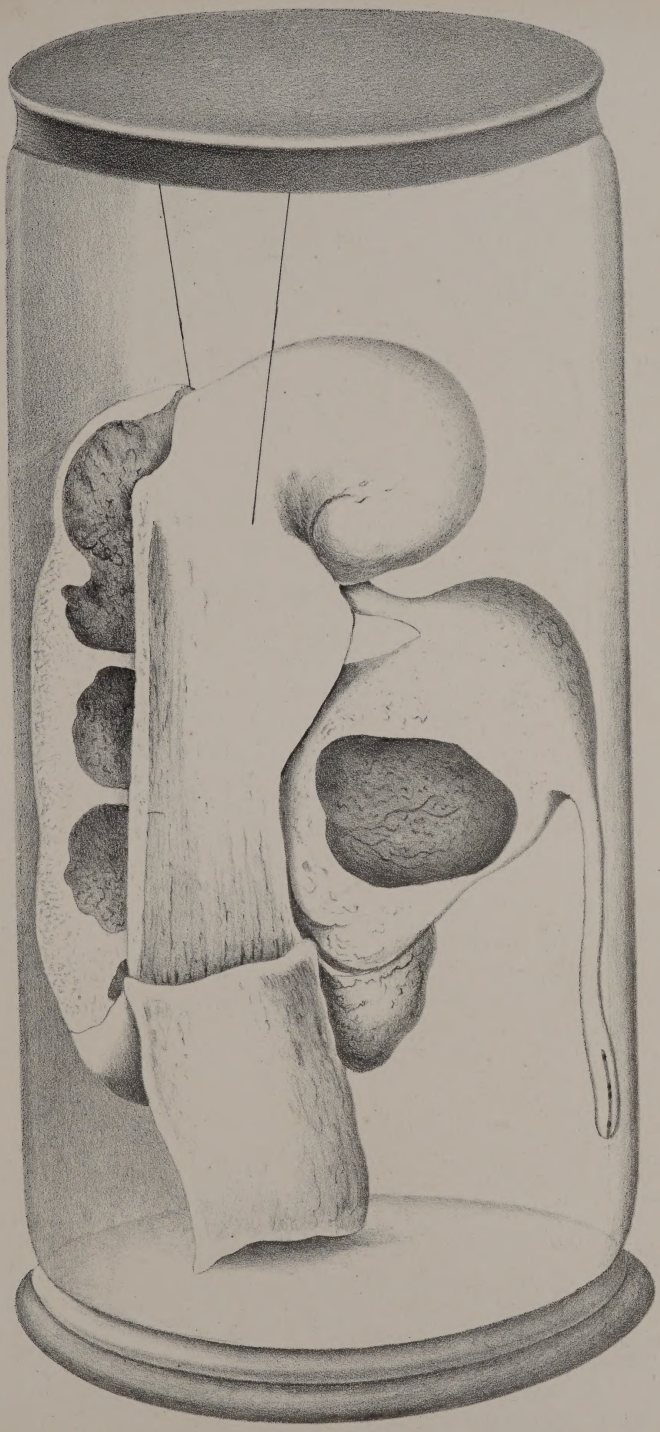

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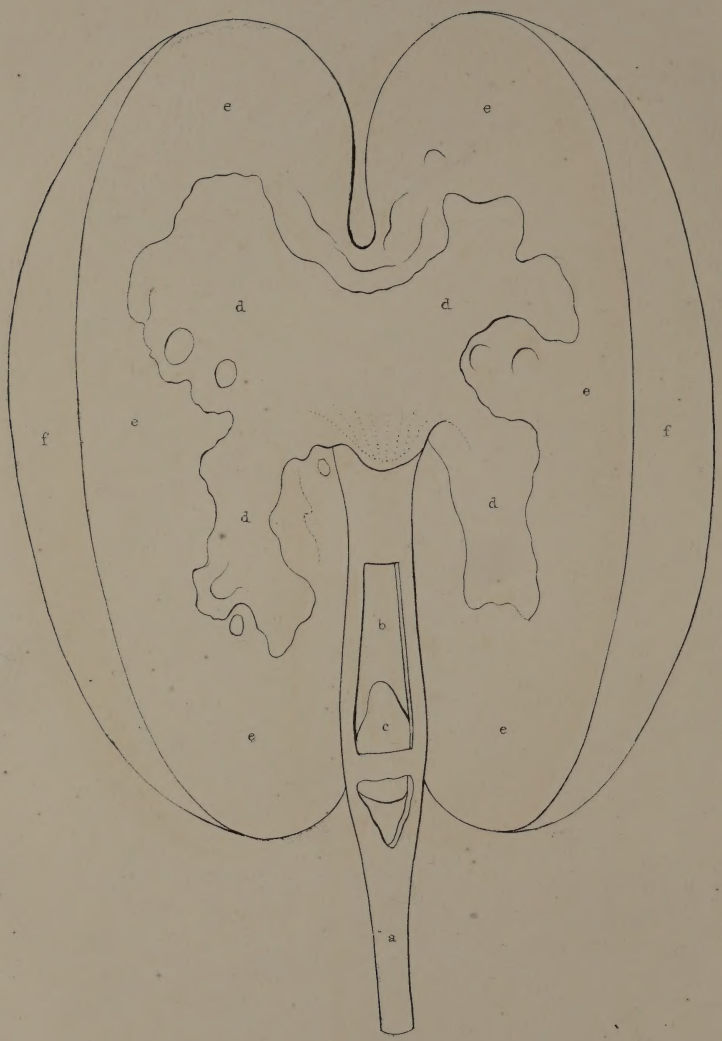
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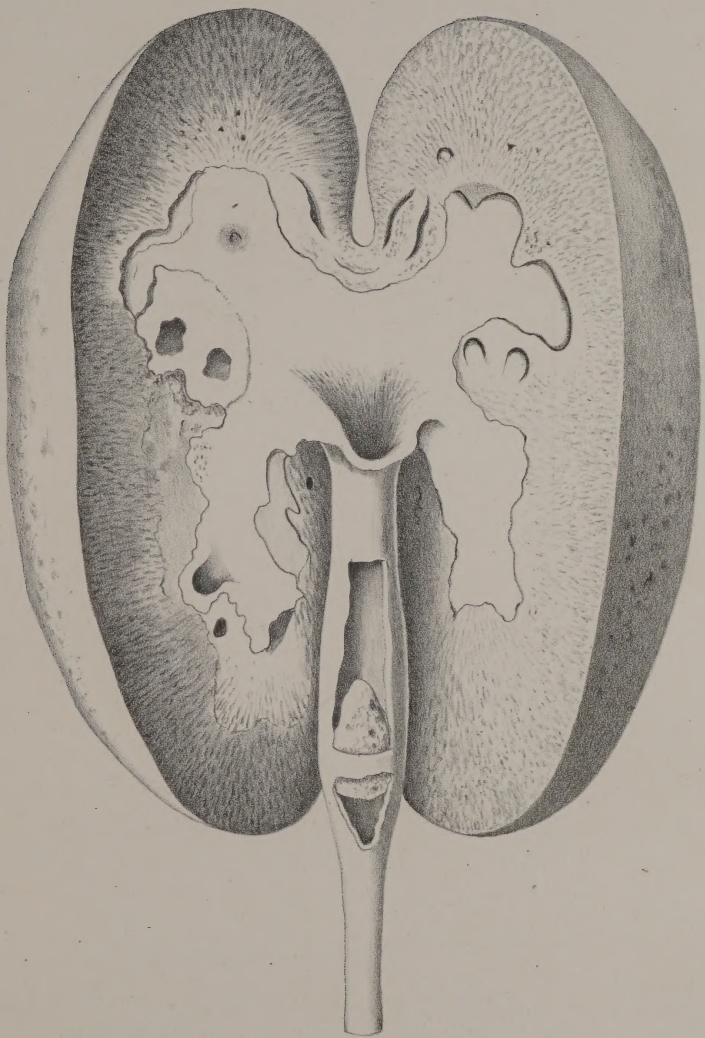

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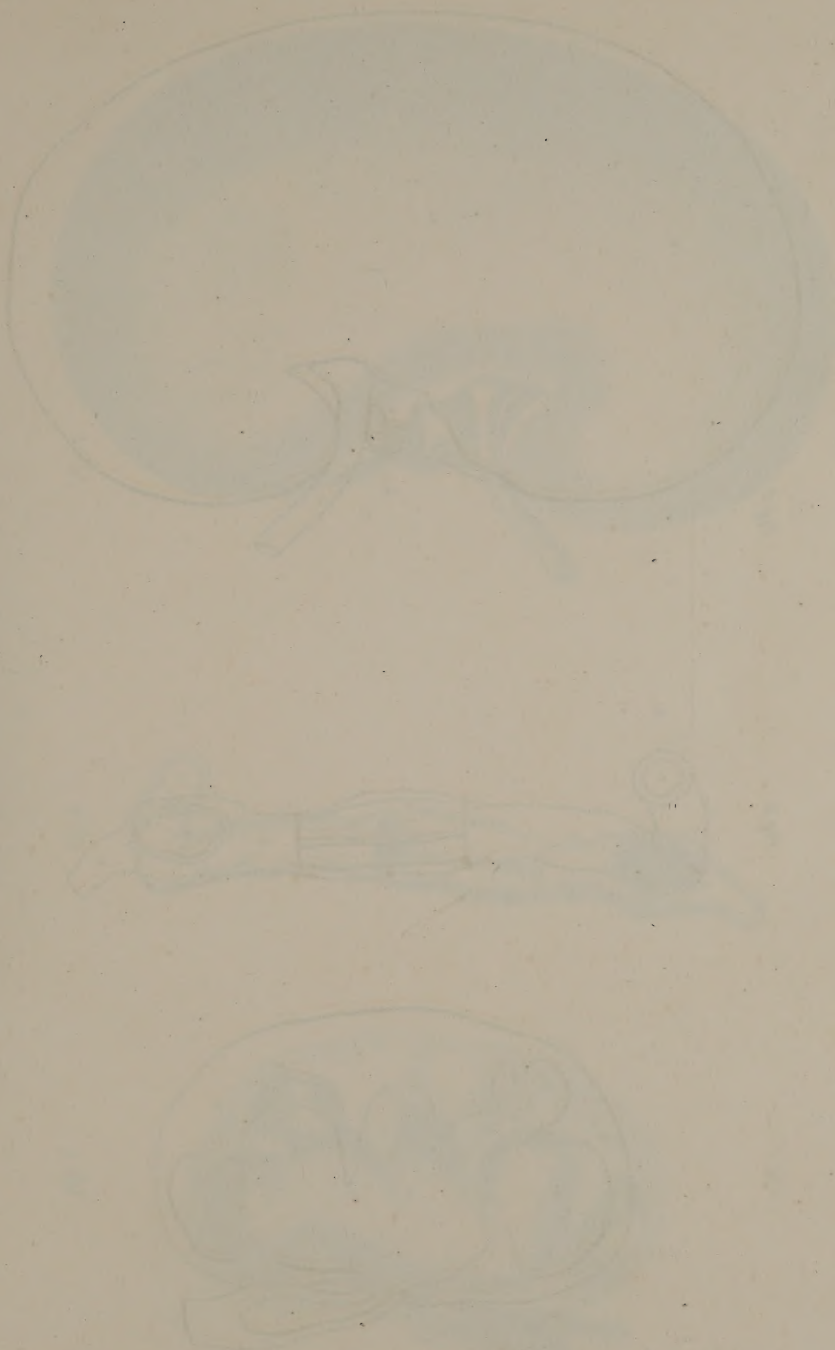

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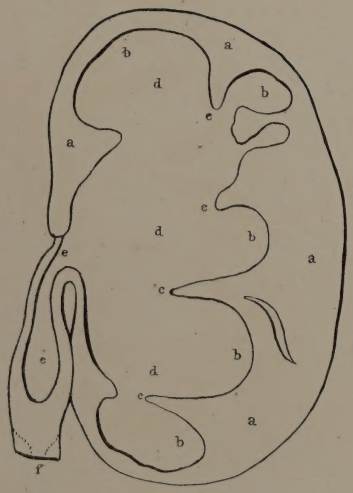

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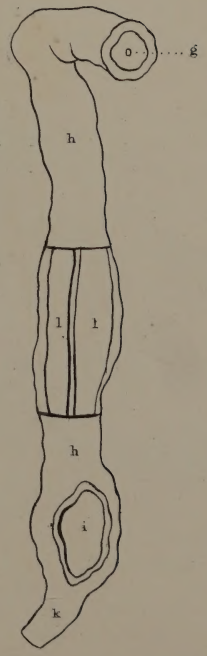

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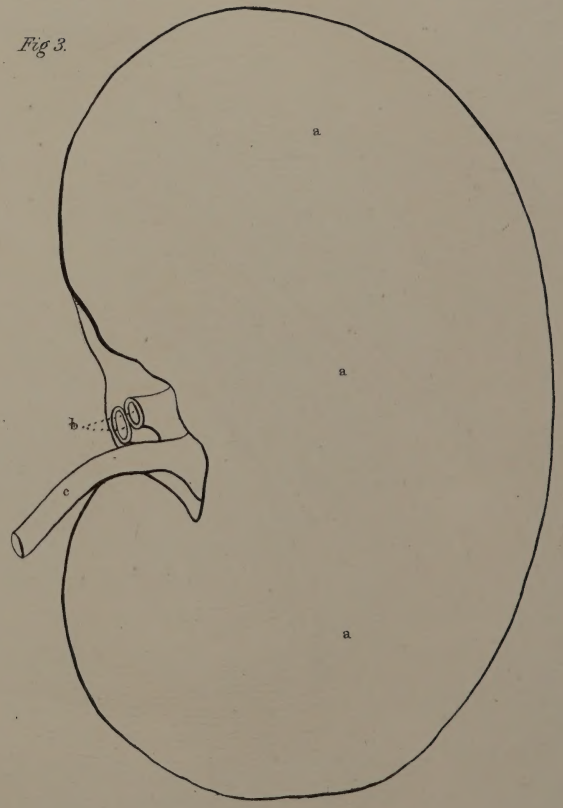

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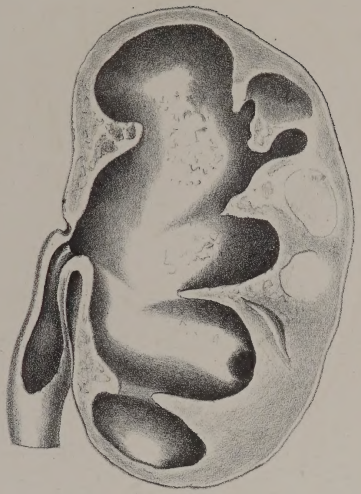

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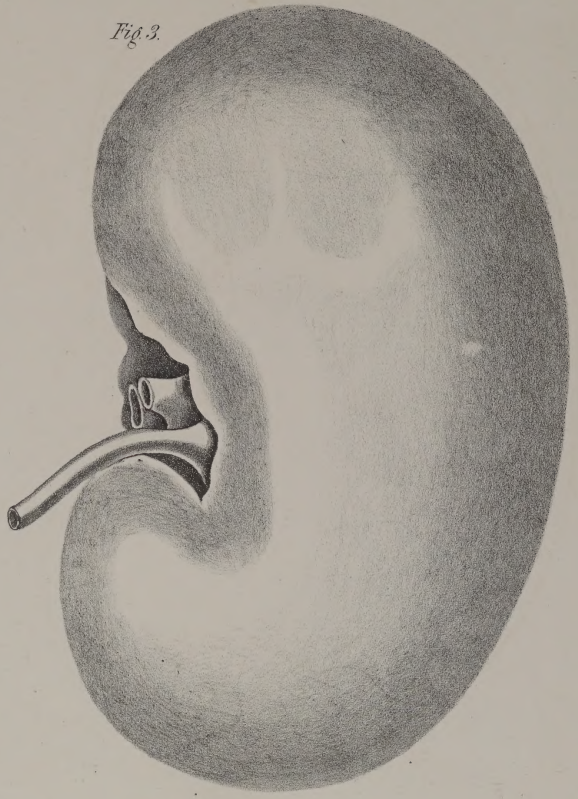

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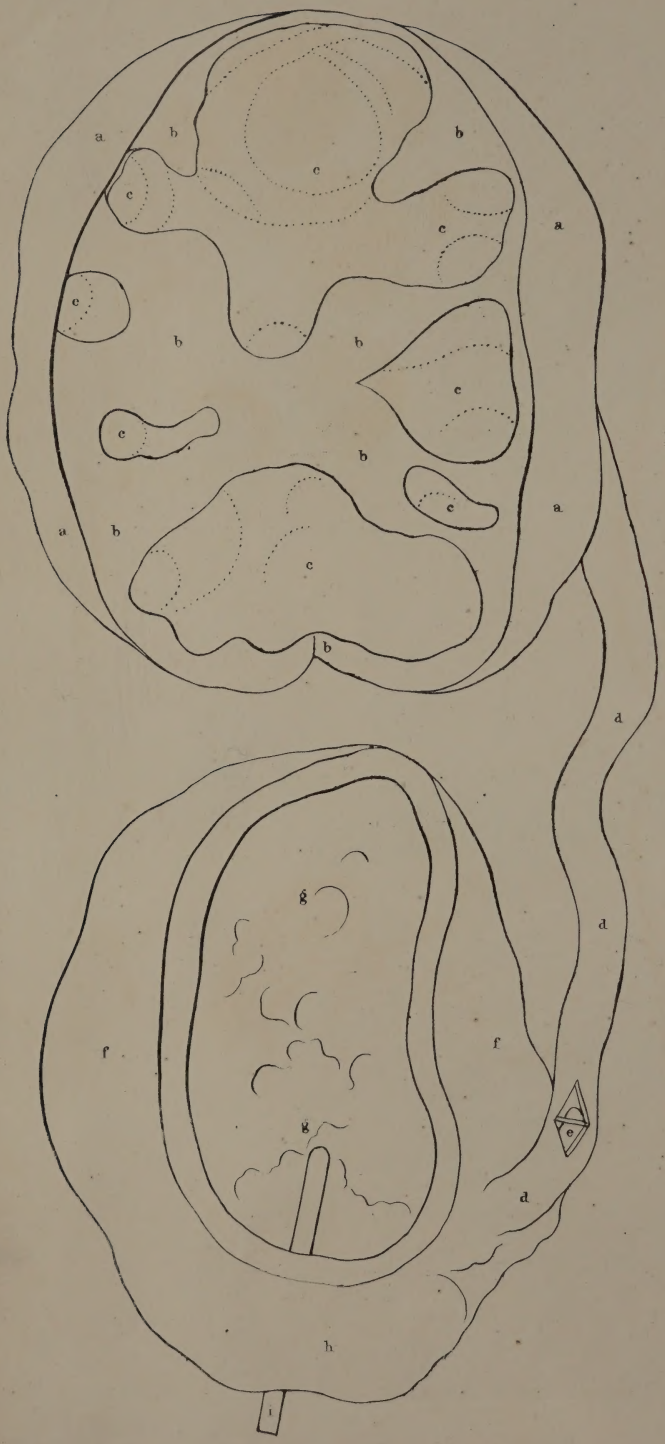

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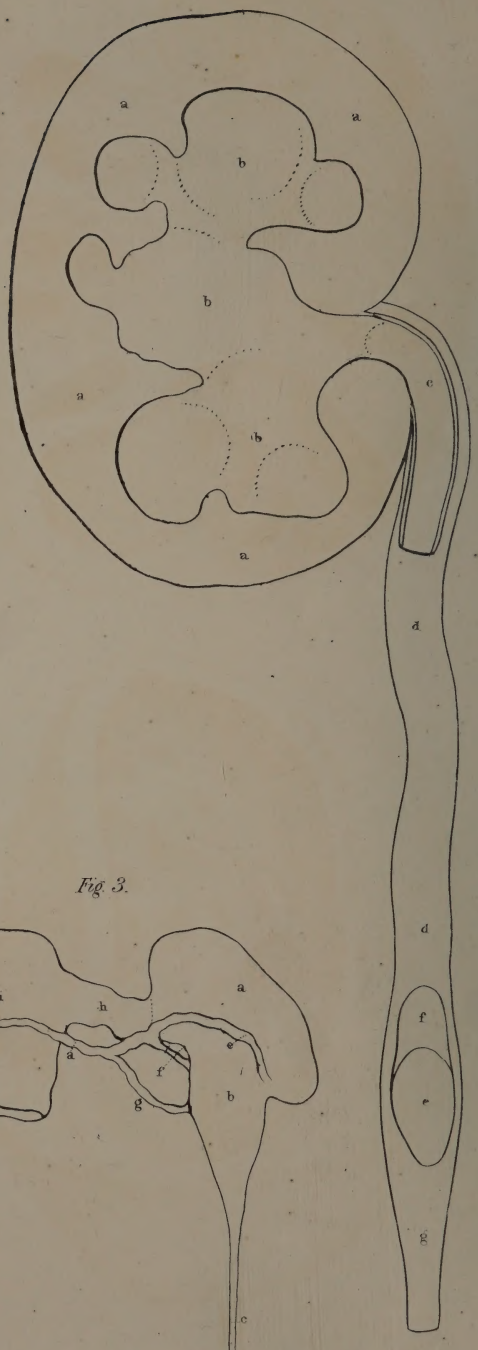

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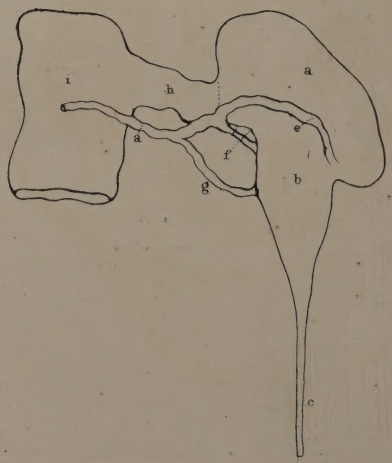

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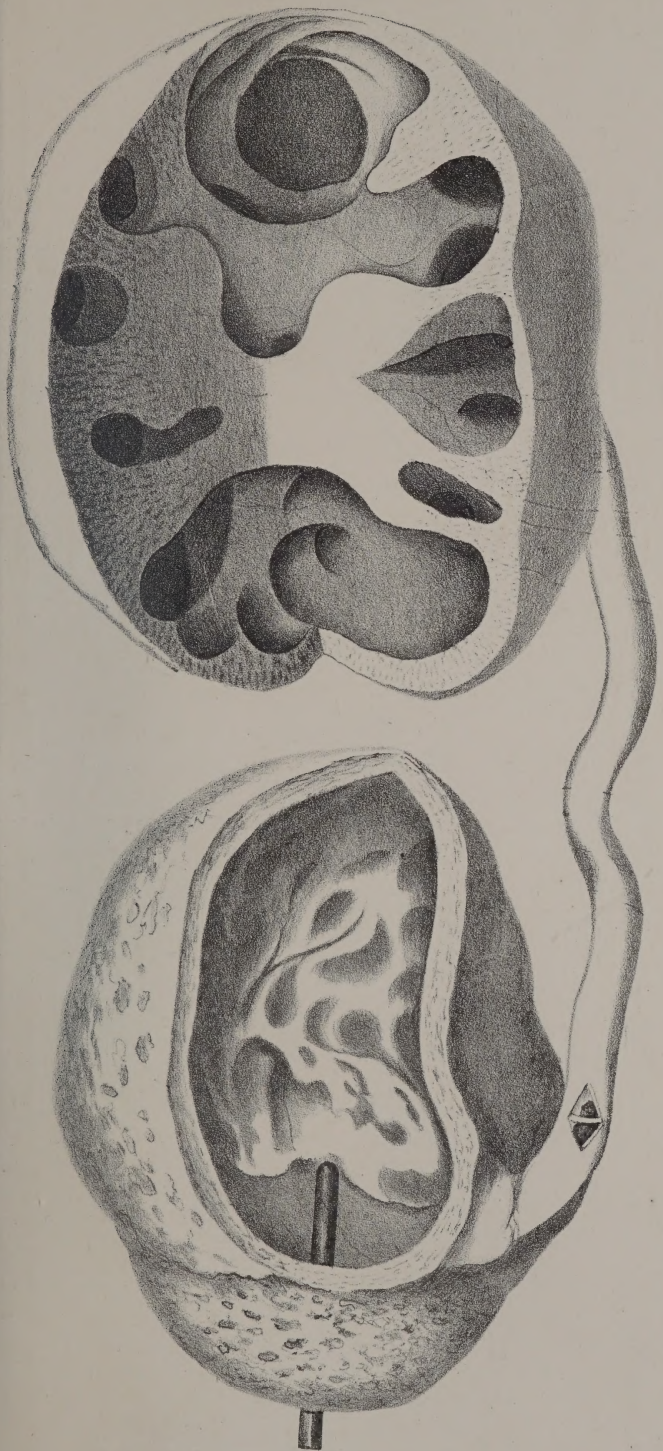

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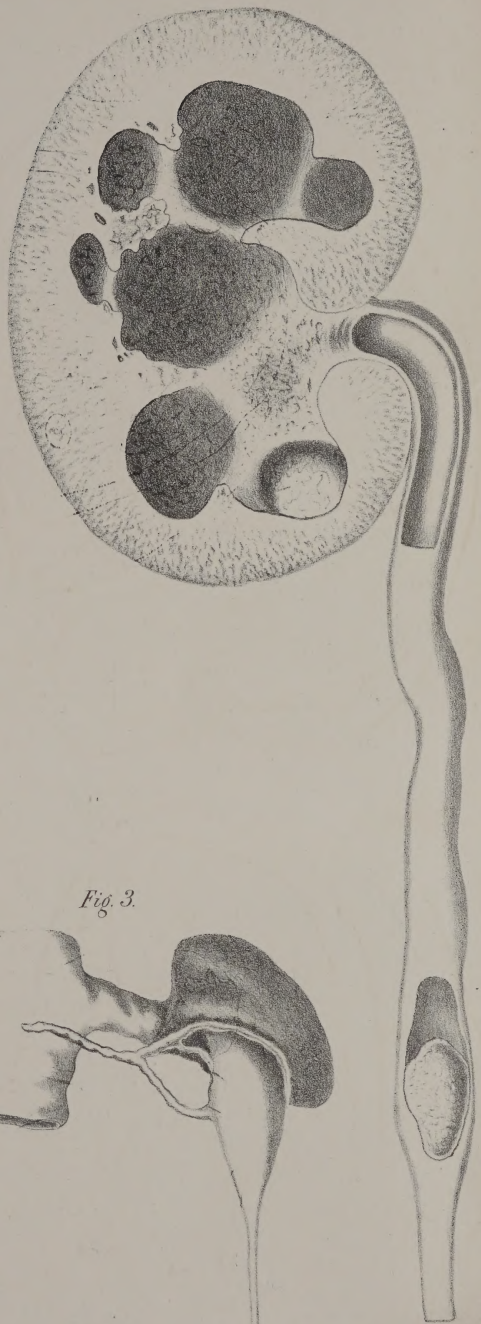

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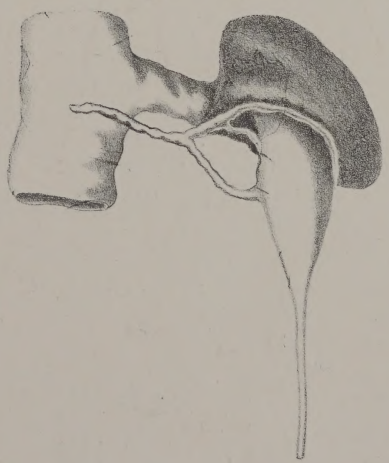

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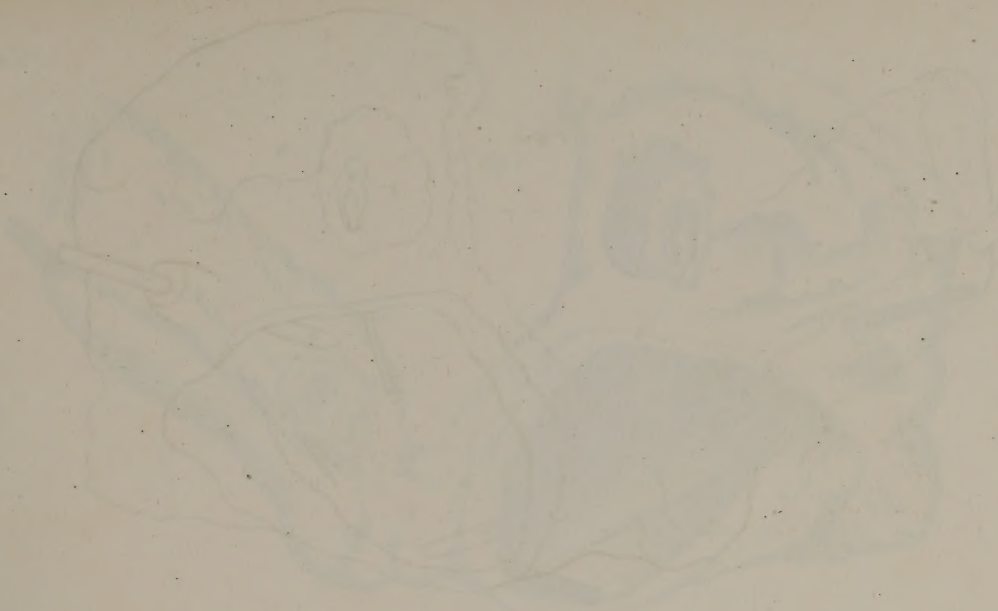

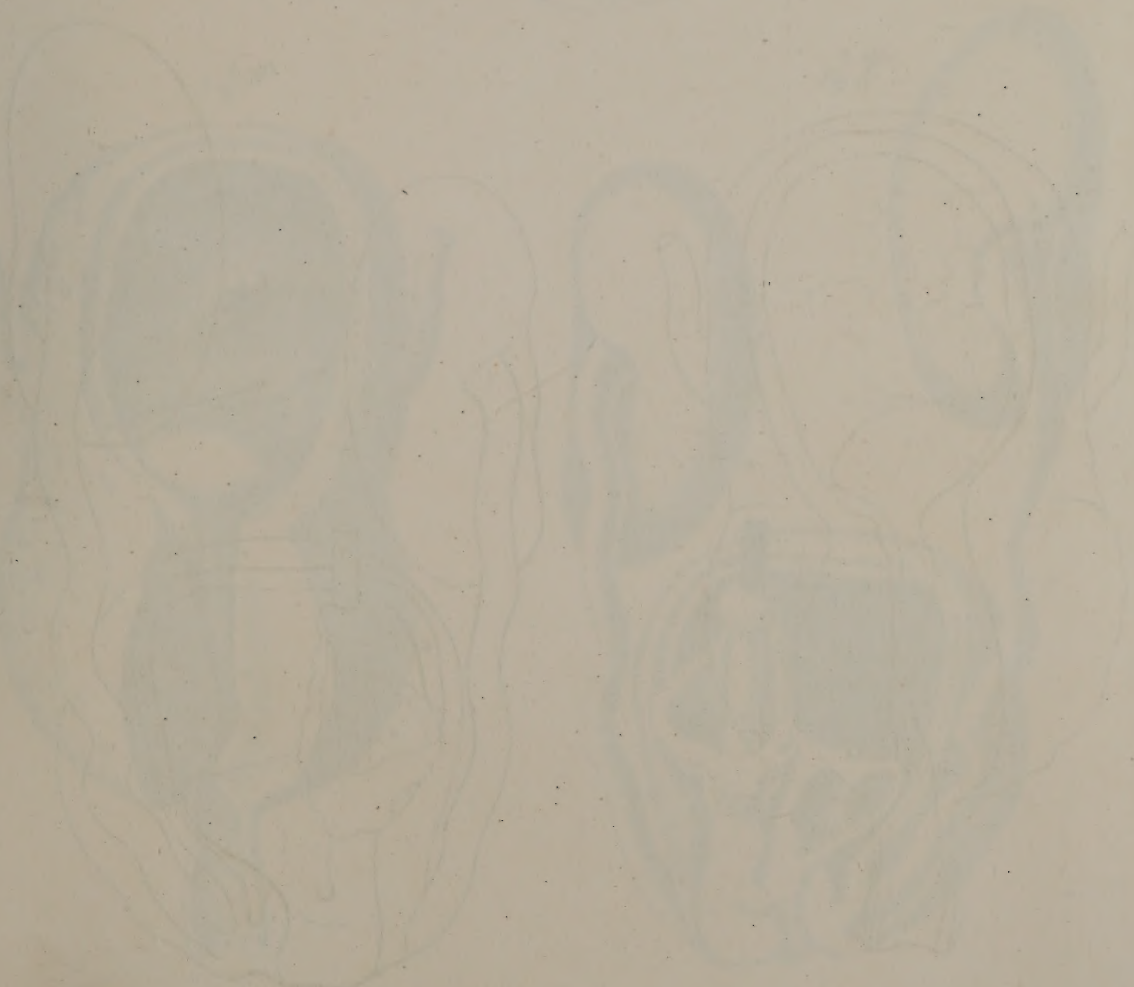

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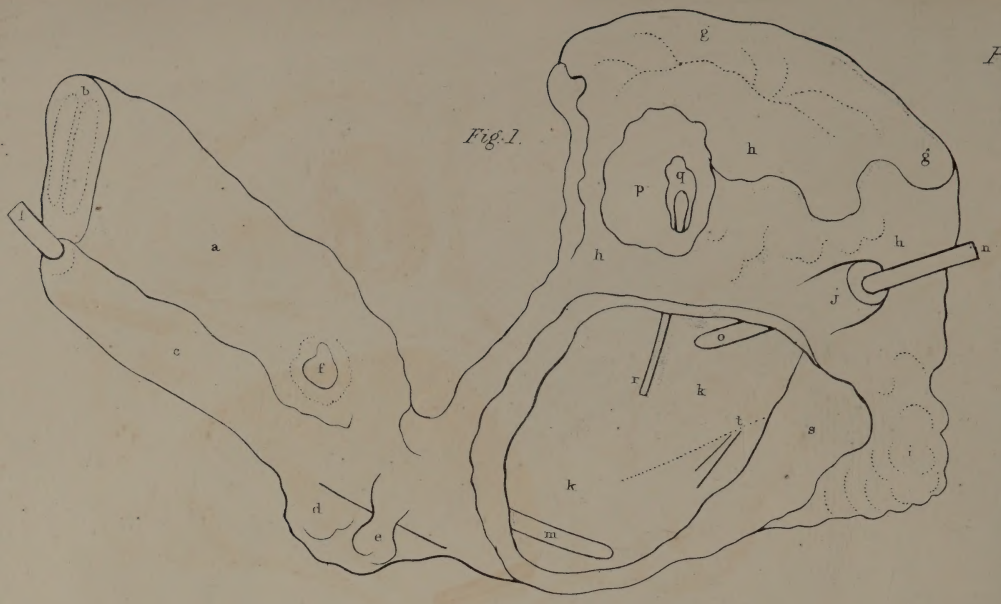

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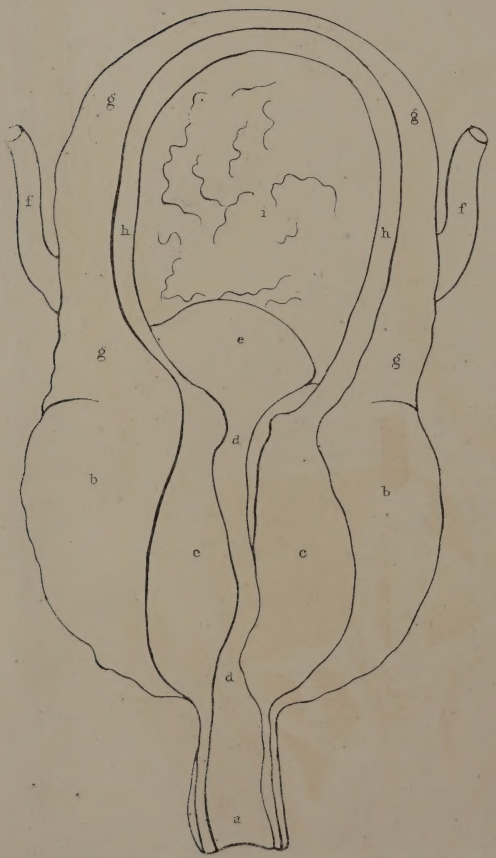

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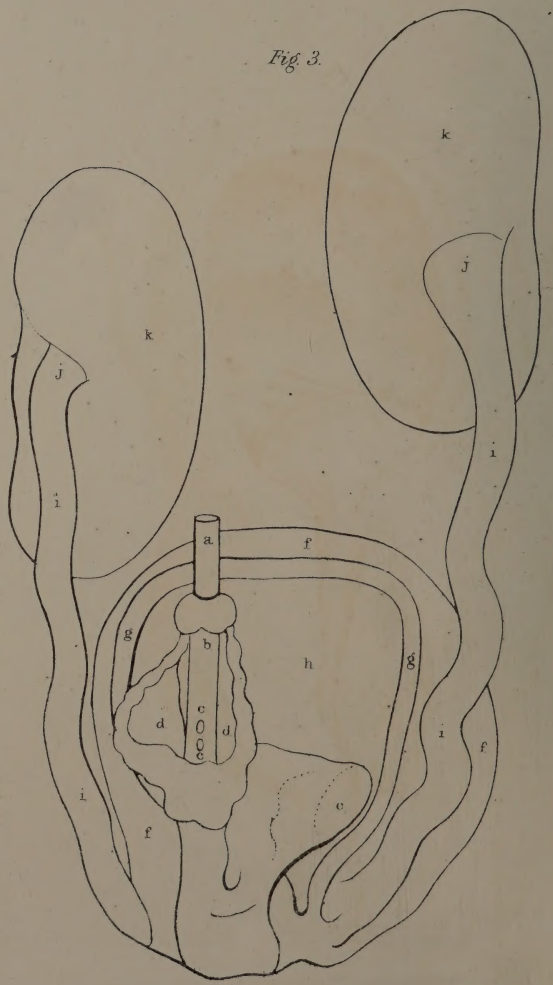

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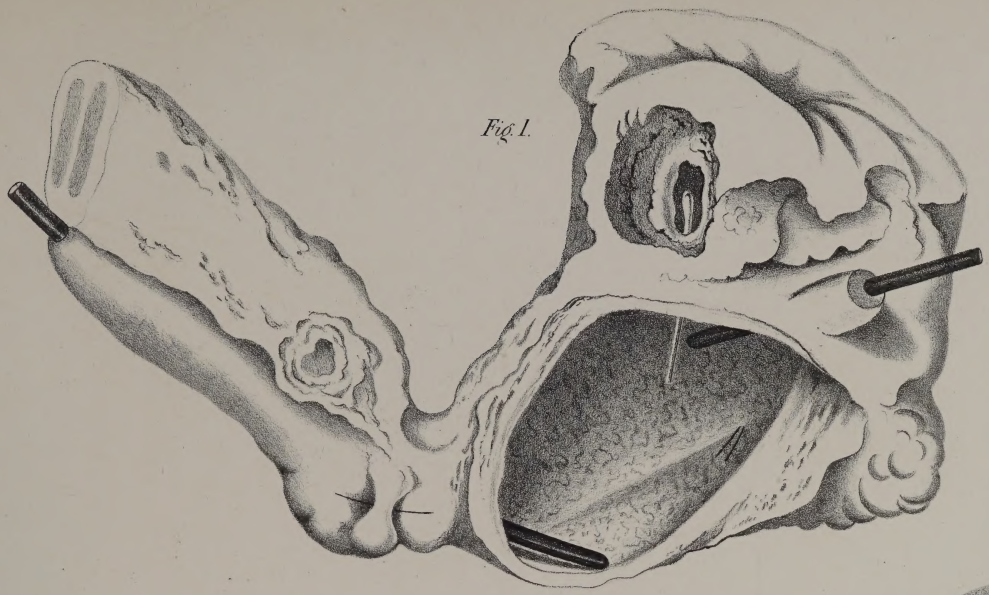

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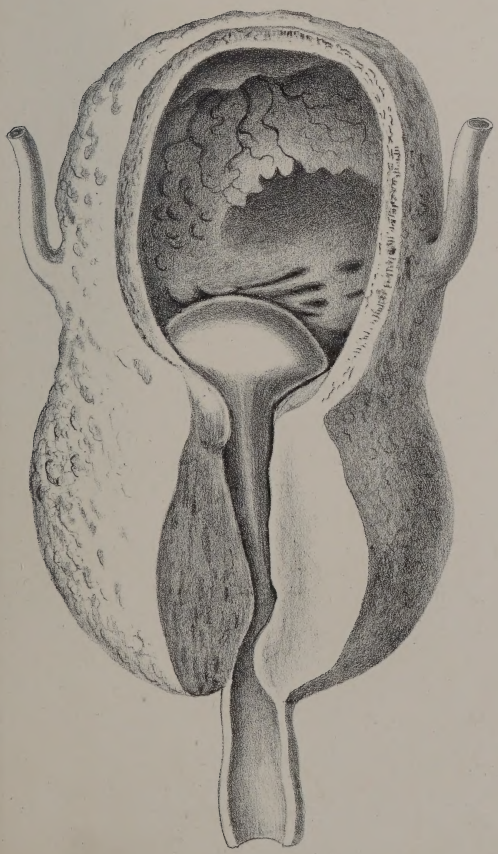

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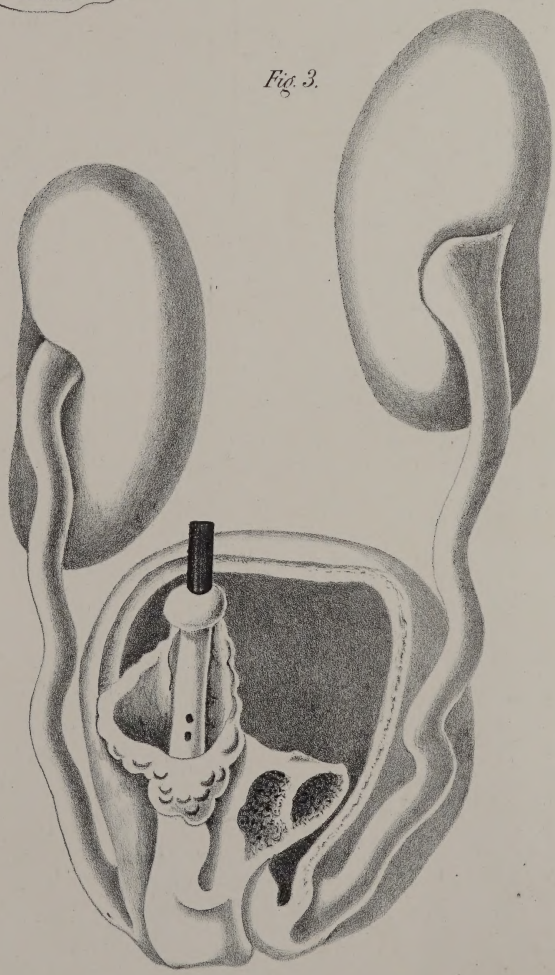

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Fig. 1.

PLATE 10.

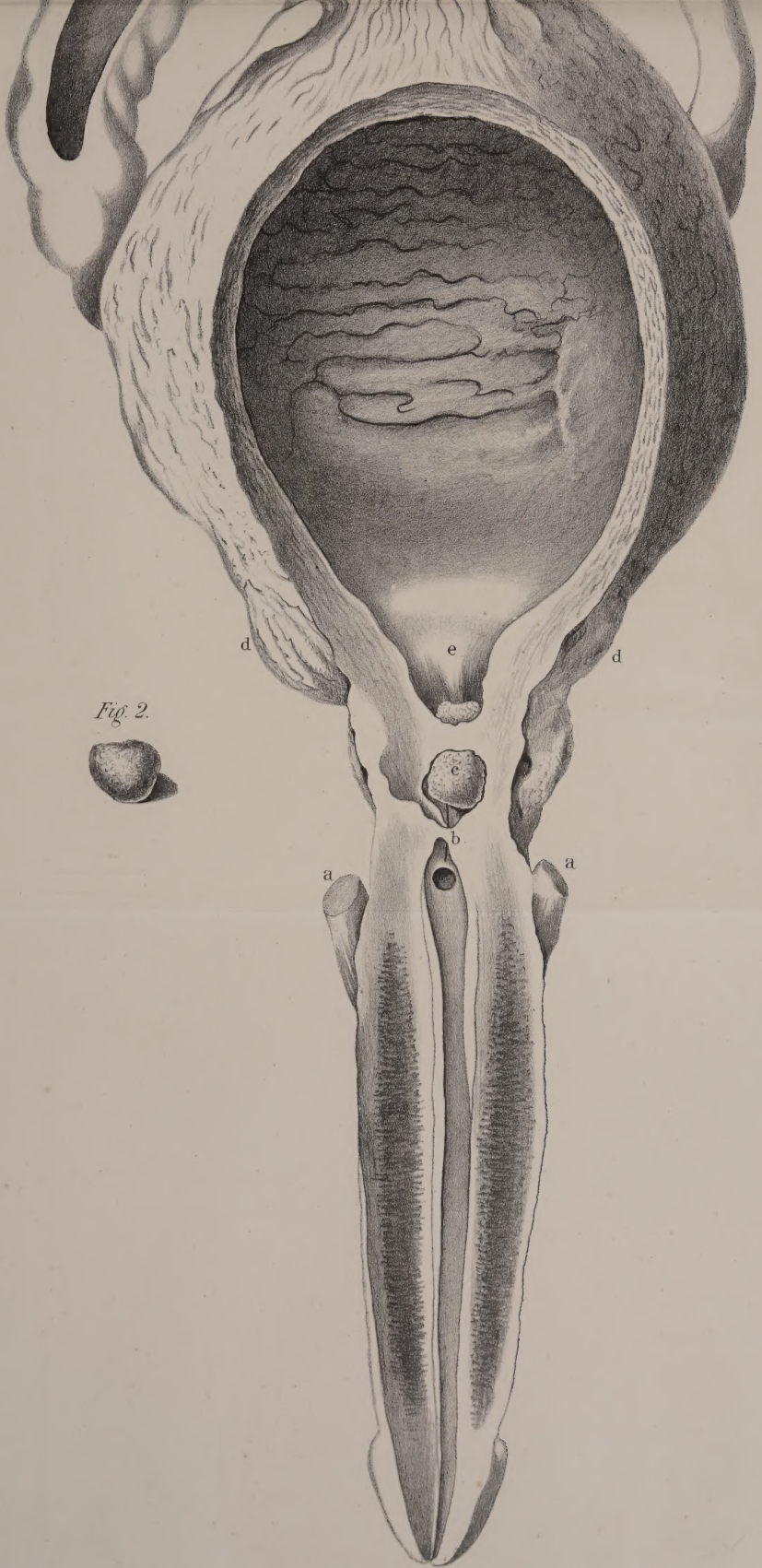

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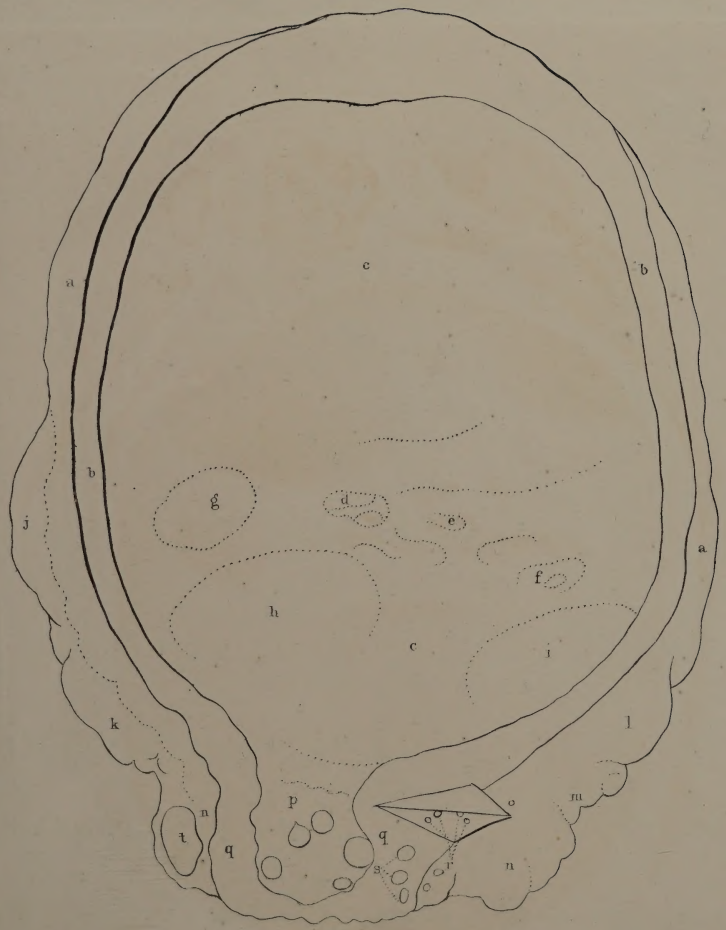
Fig 2.



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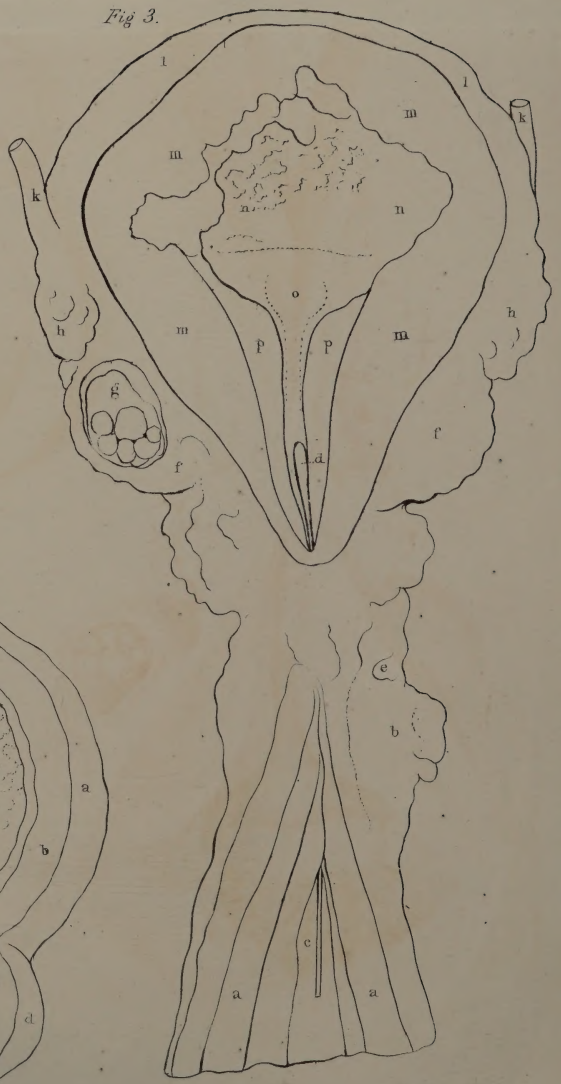

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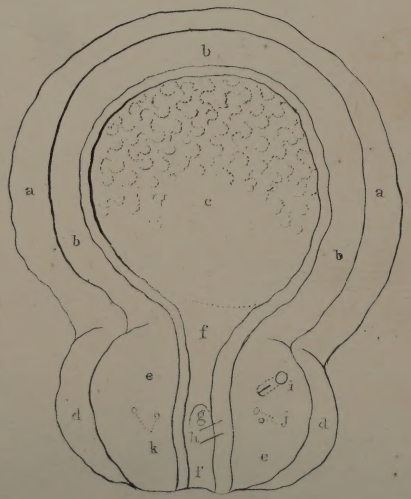

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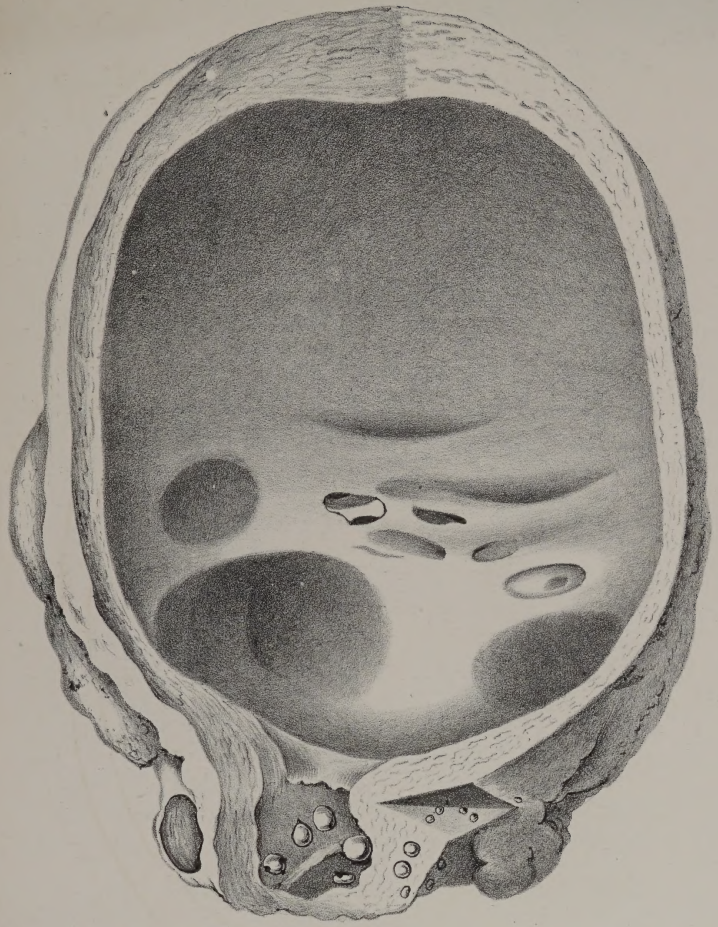

Fig. 3.

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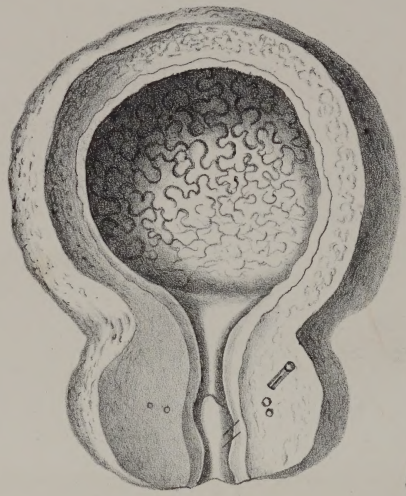

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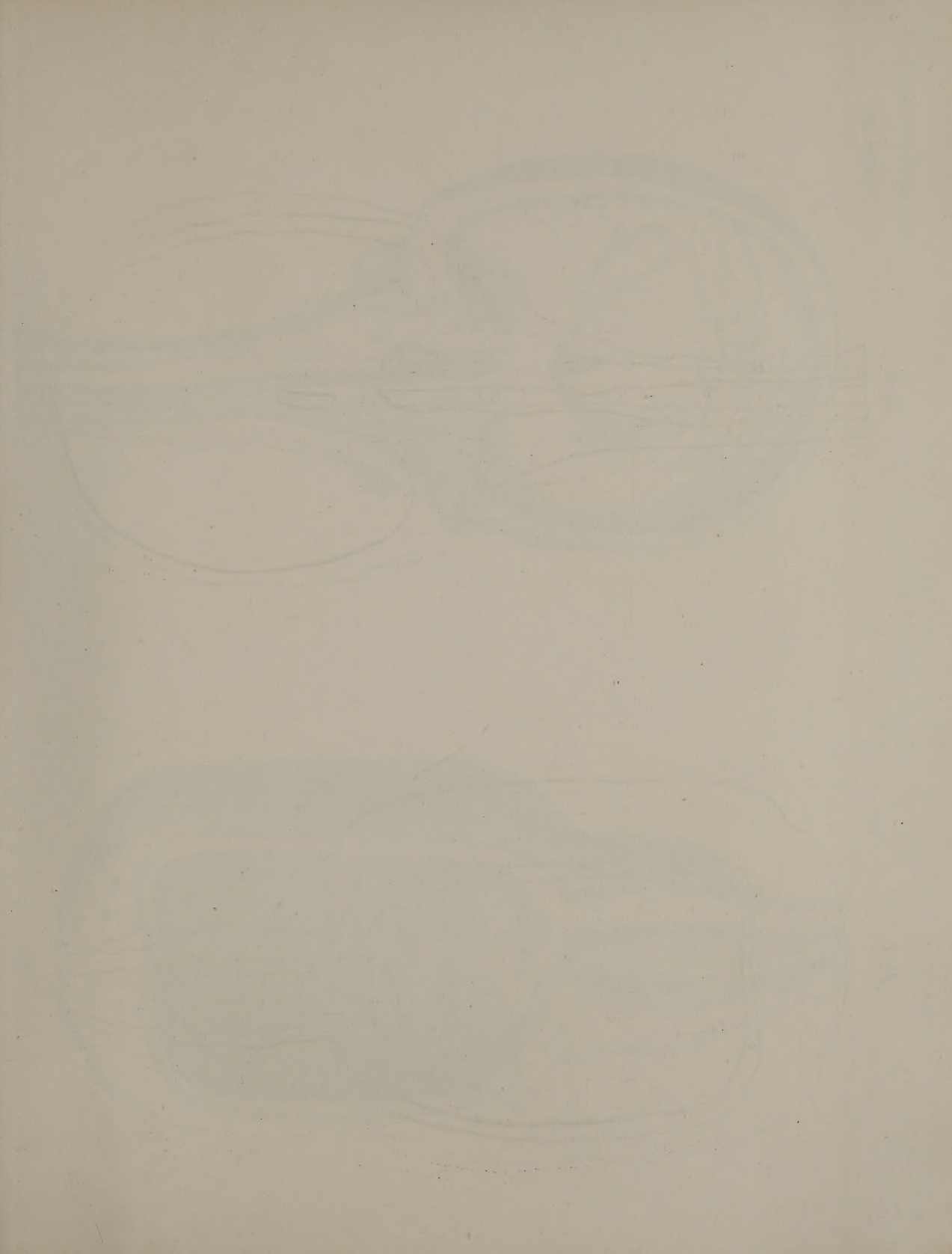

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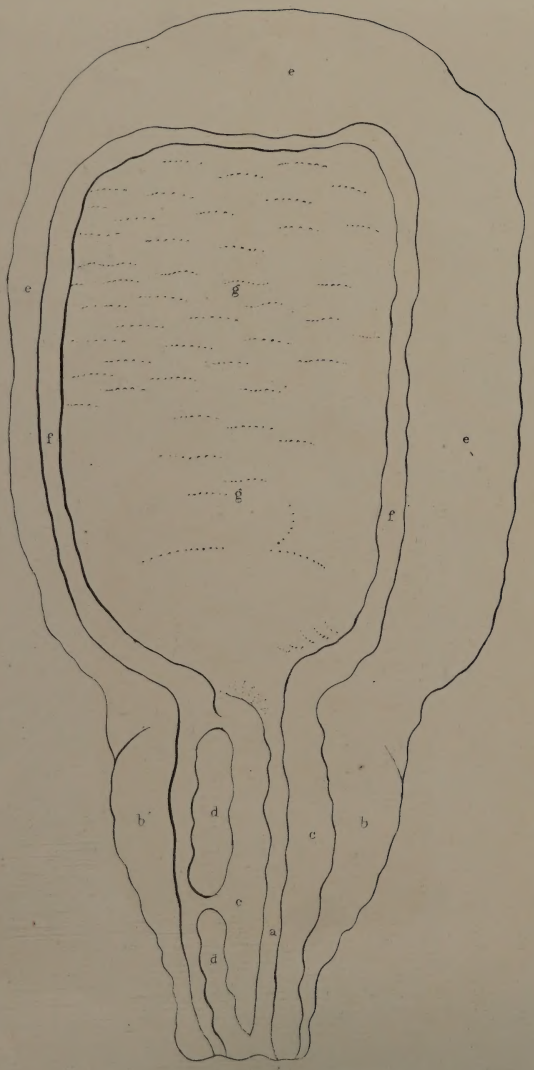

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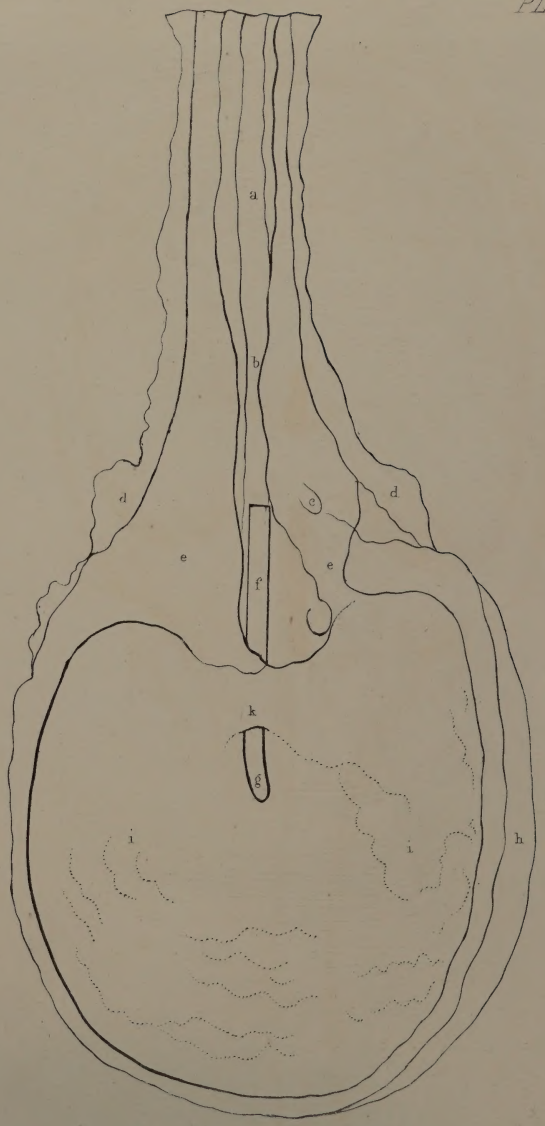

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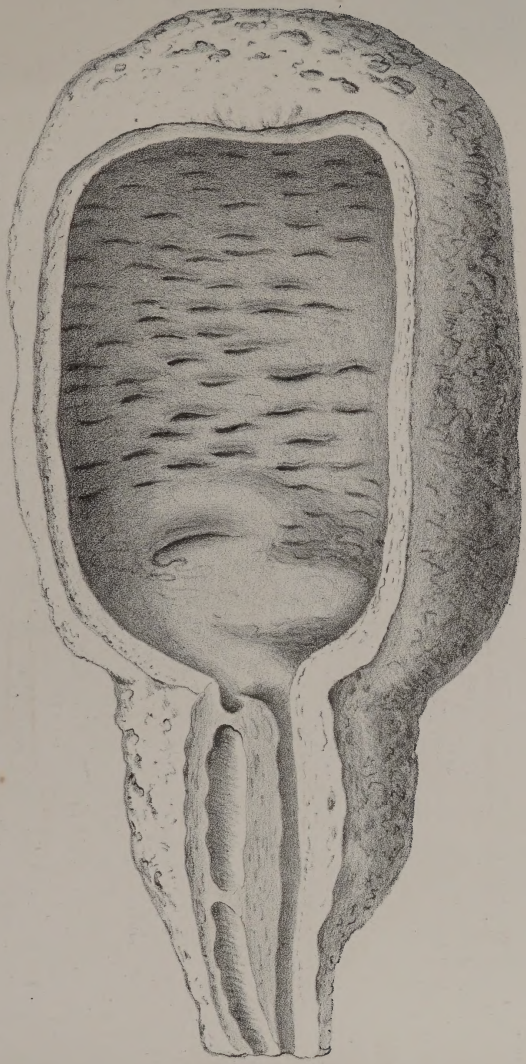

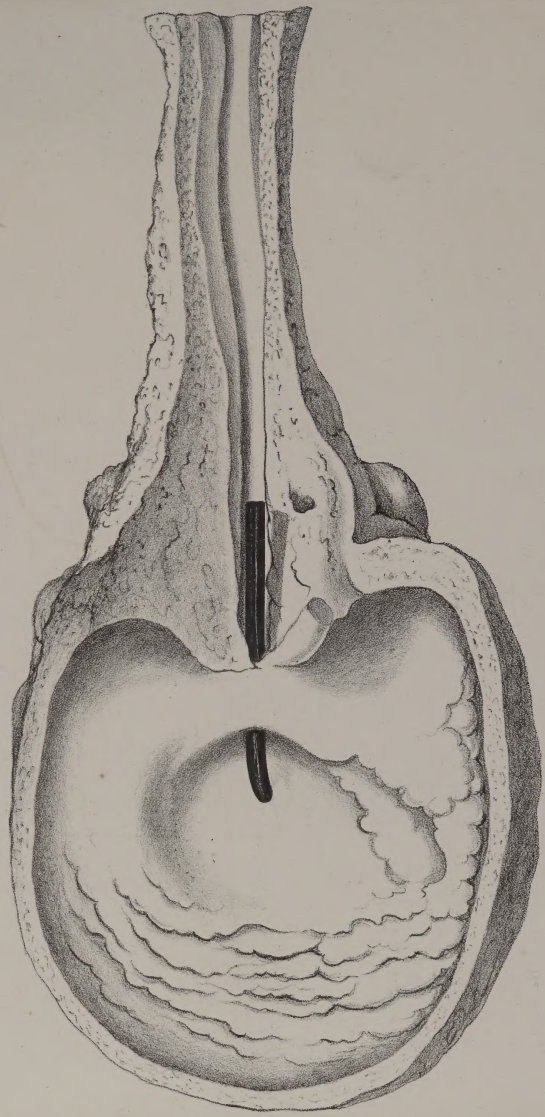

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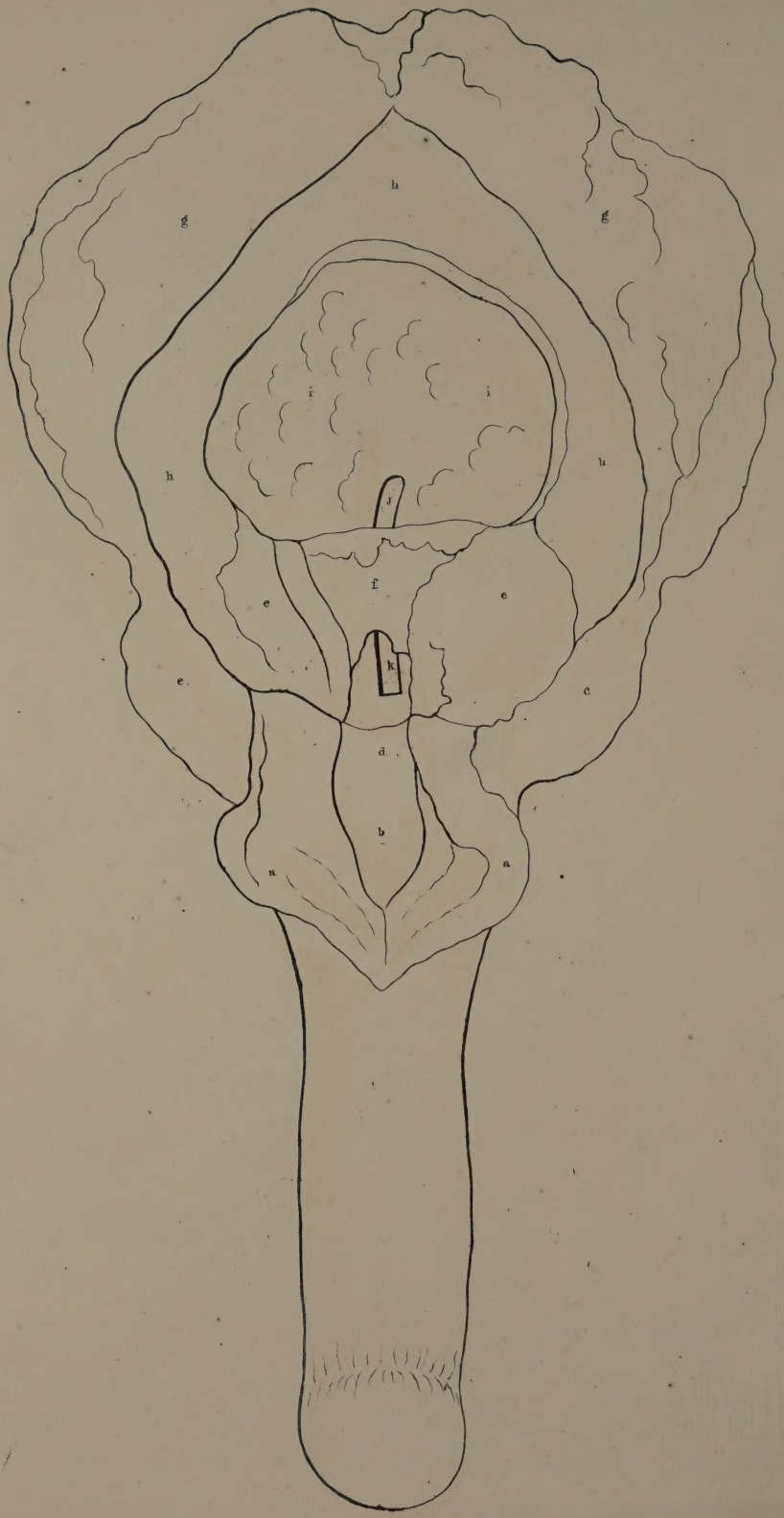
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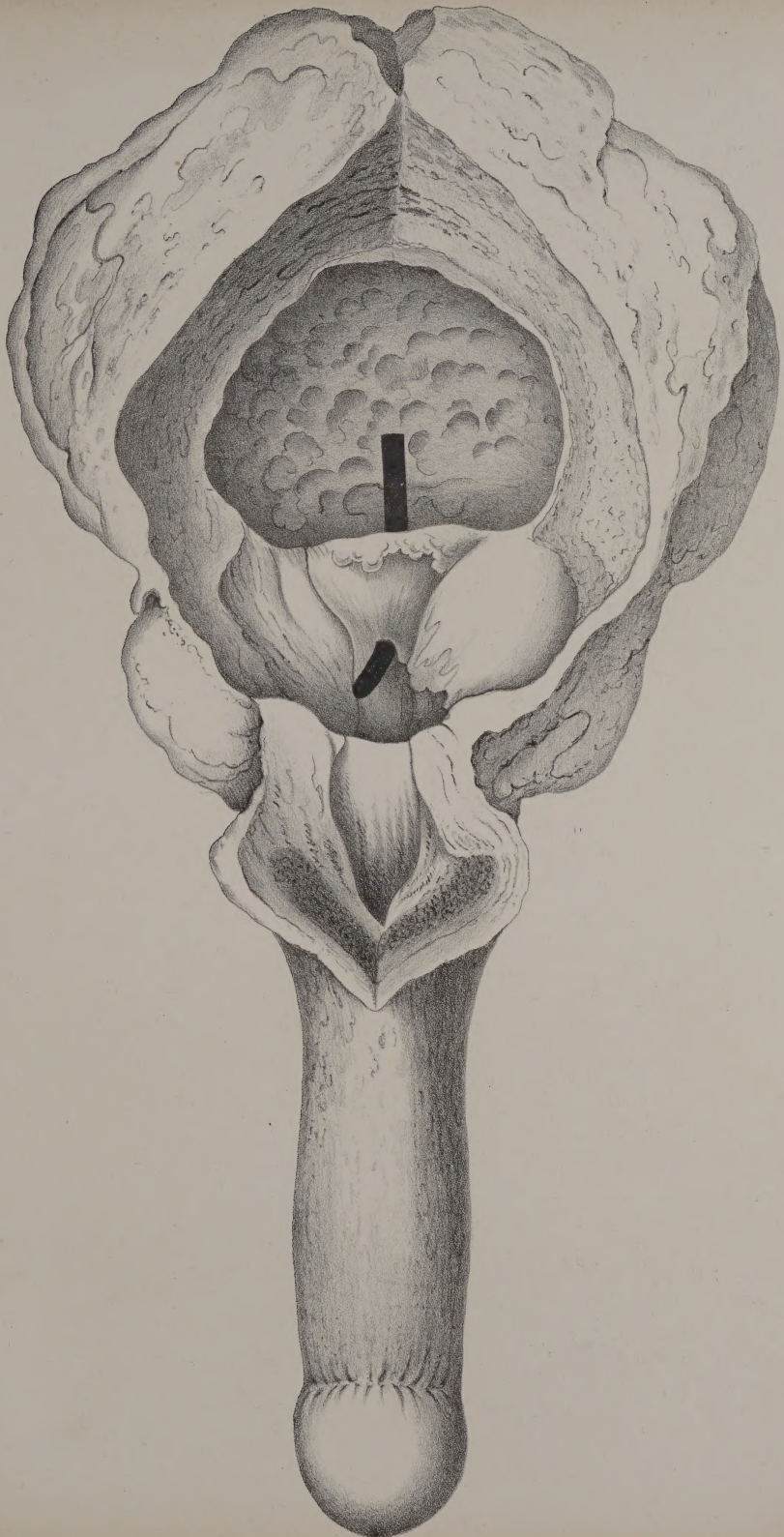

PLATE 14.

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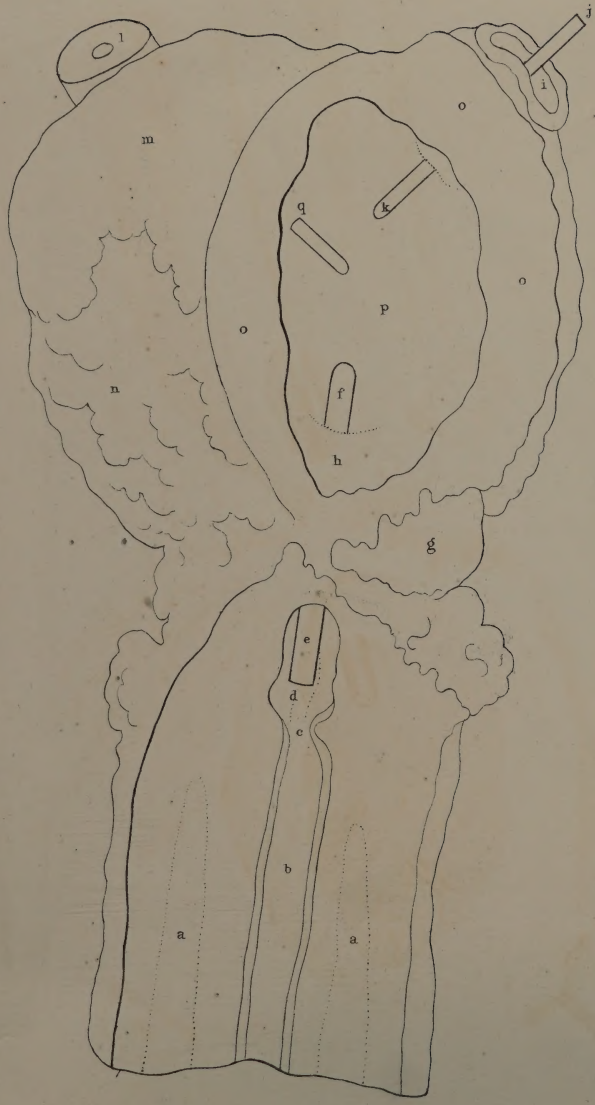
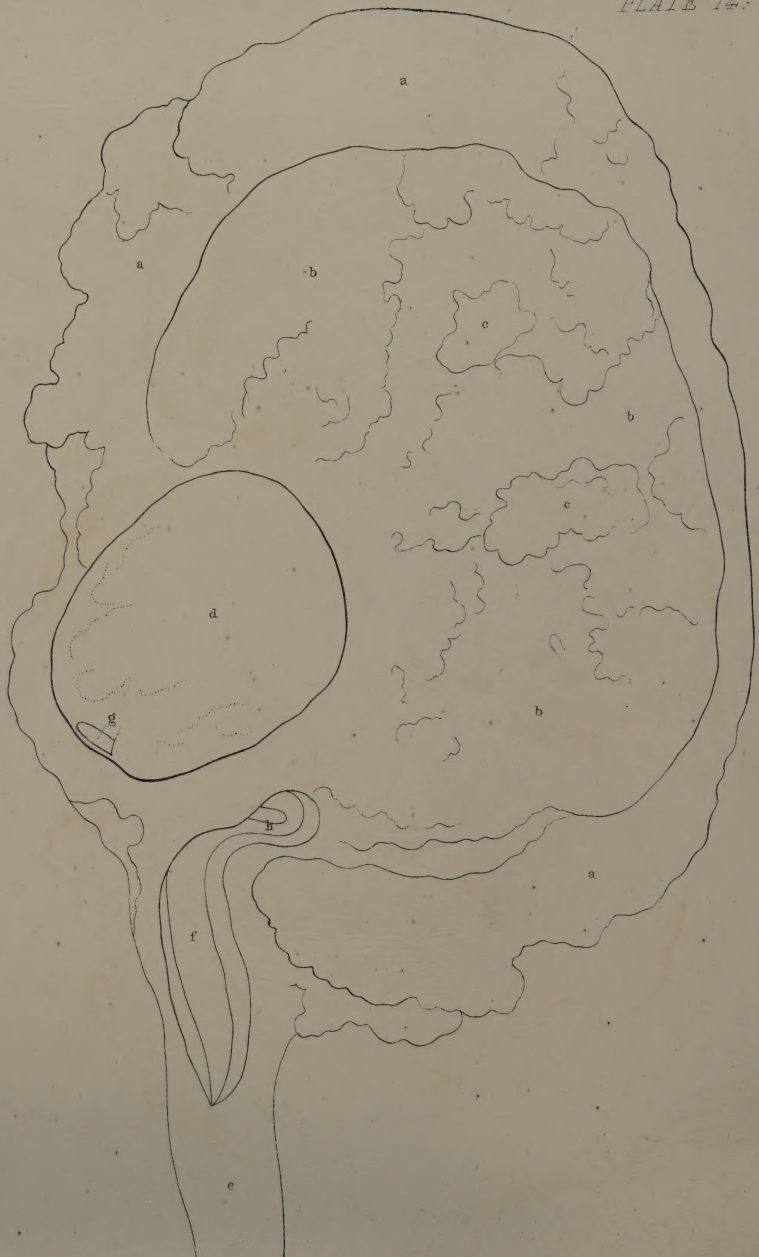


Fig 2



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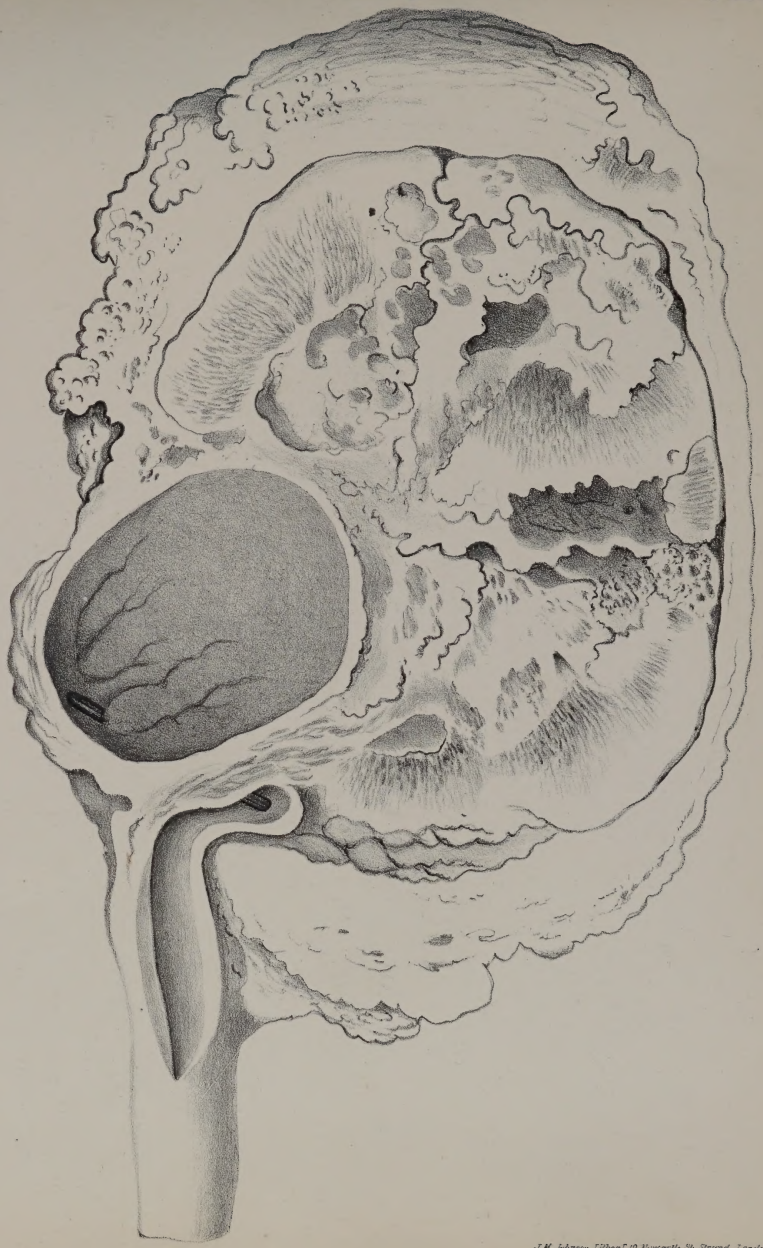

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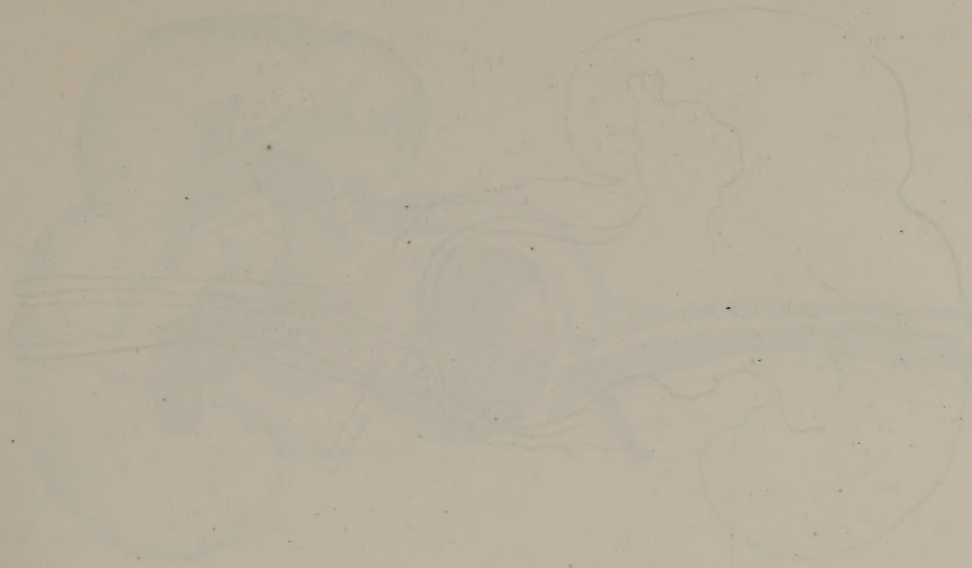

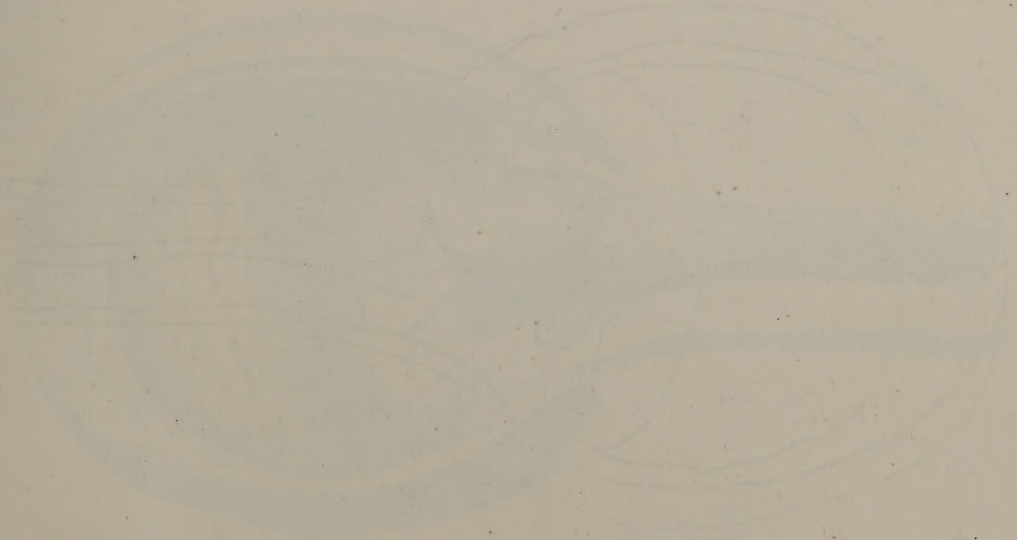

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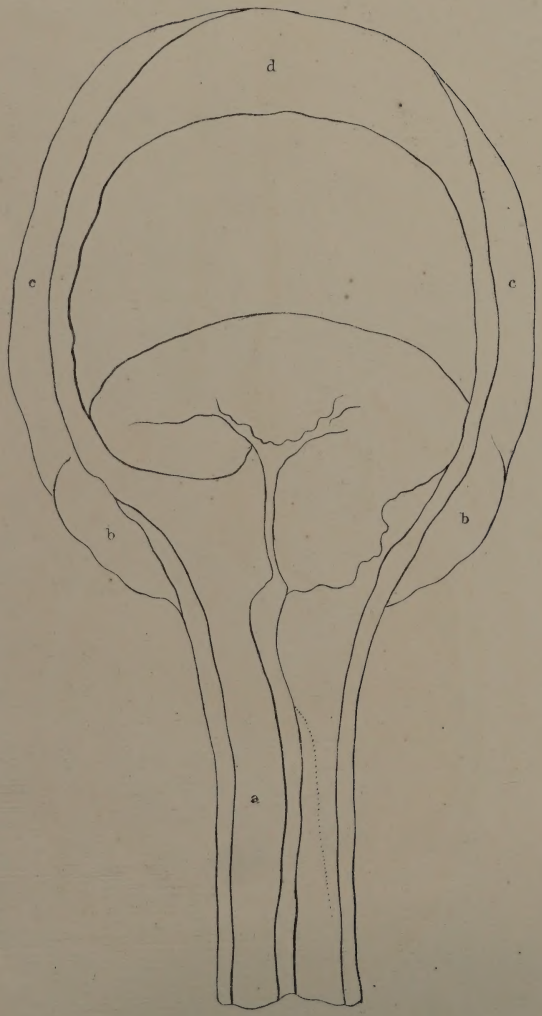

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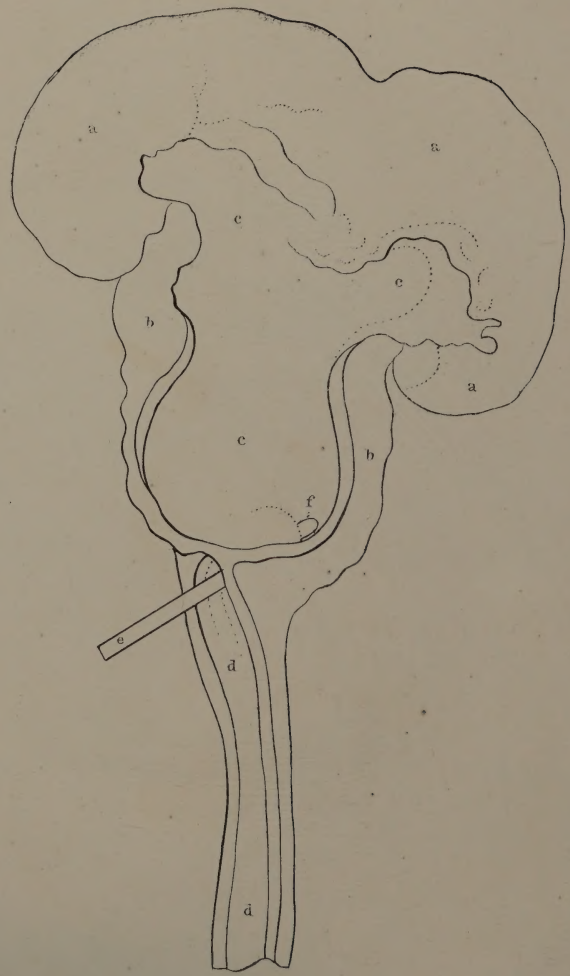

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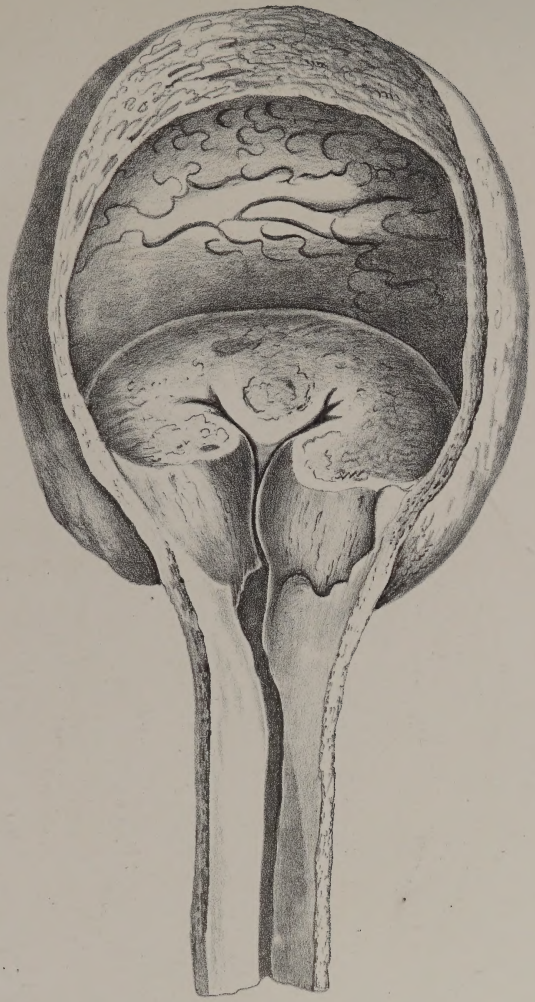

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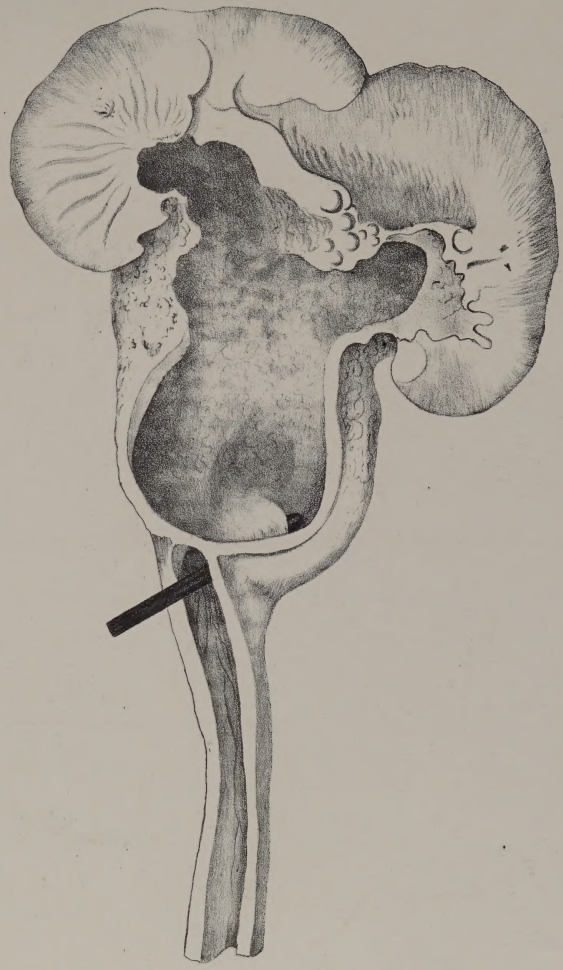

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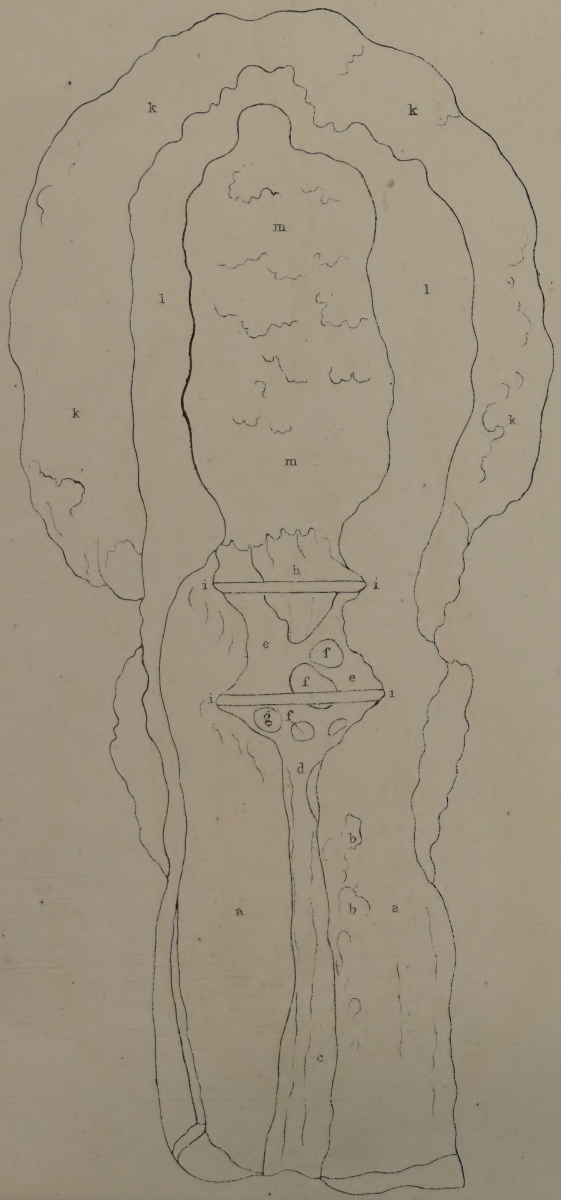

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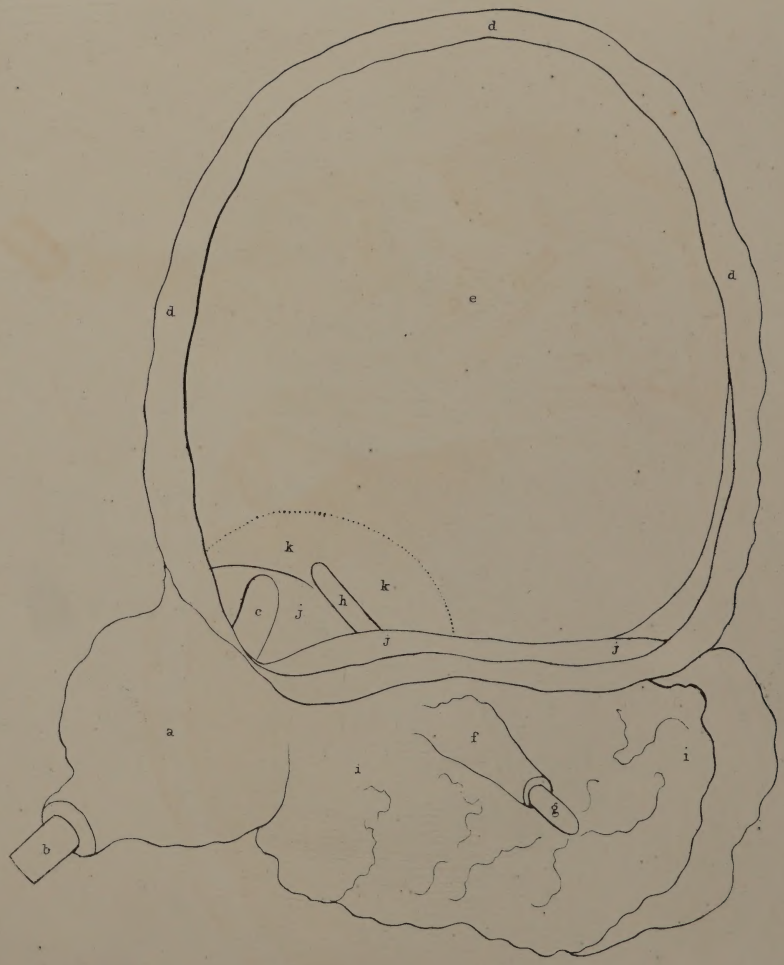

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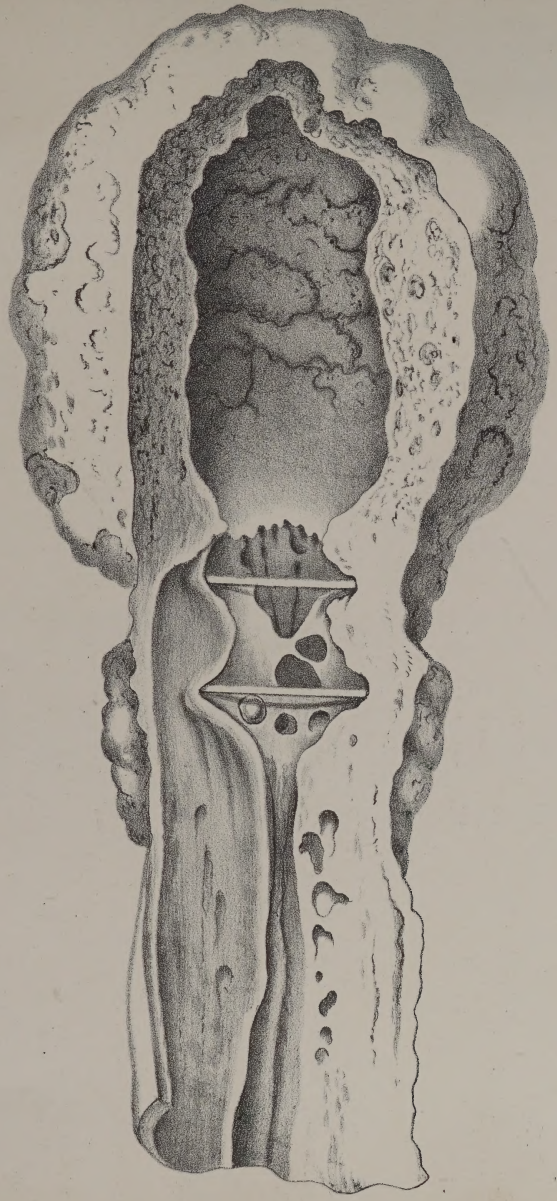

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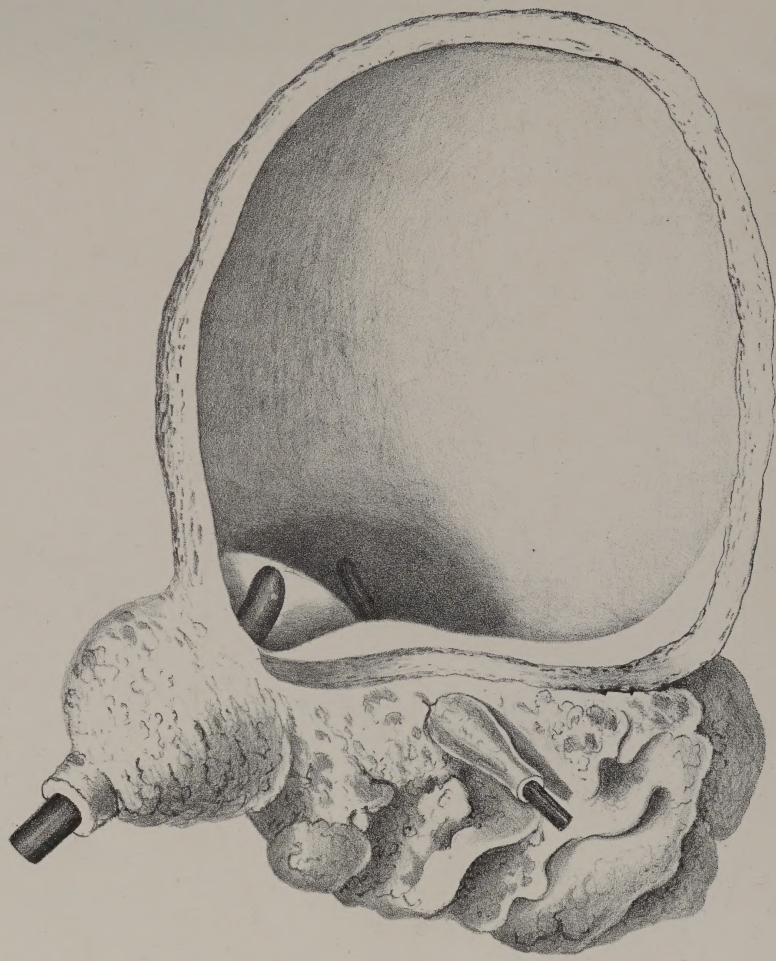

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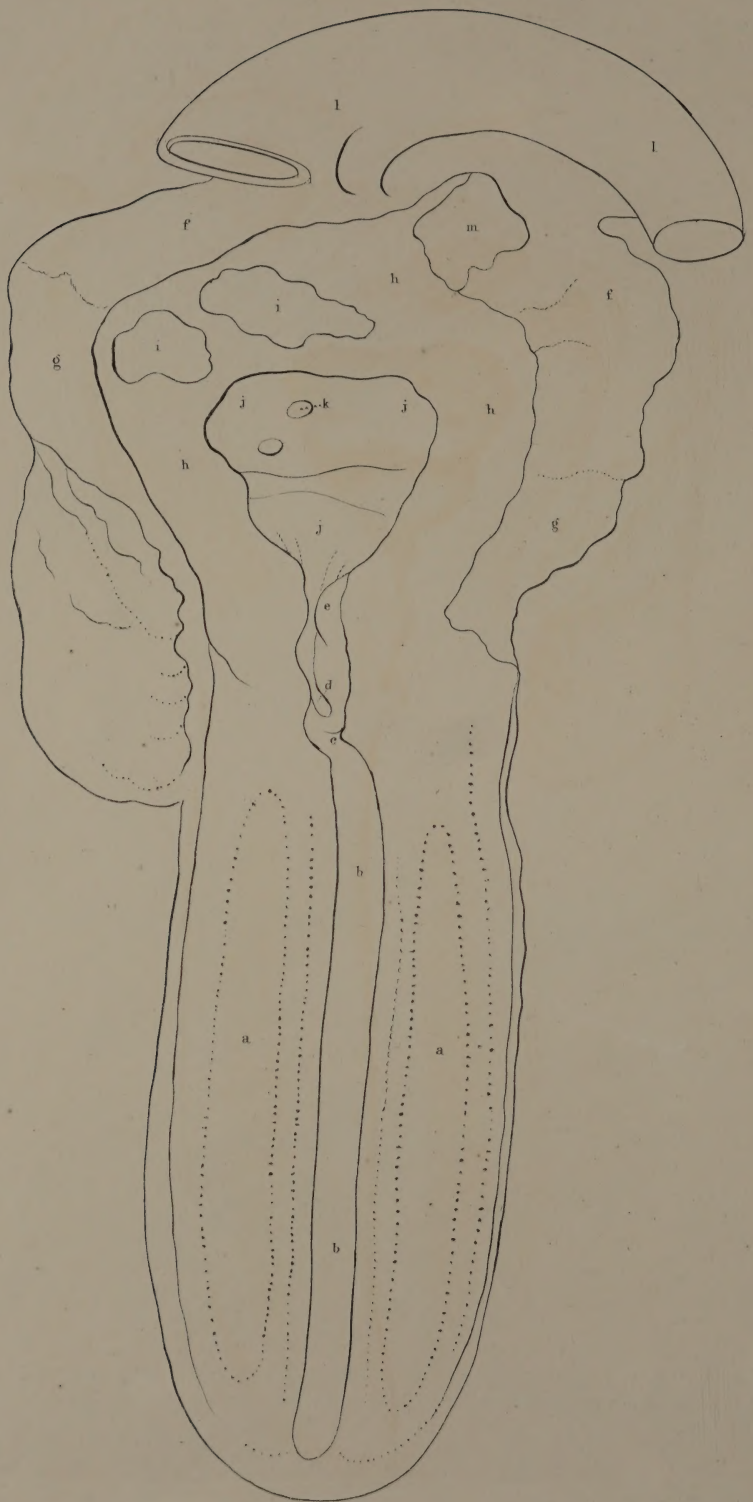
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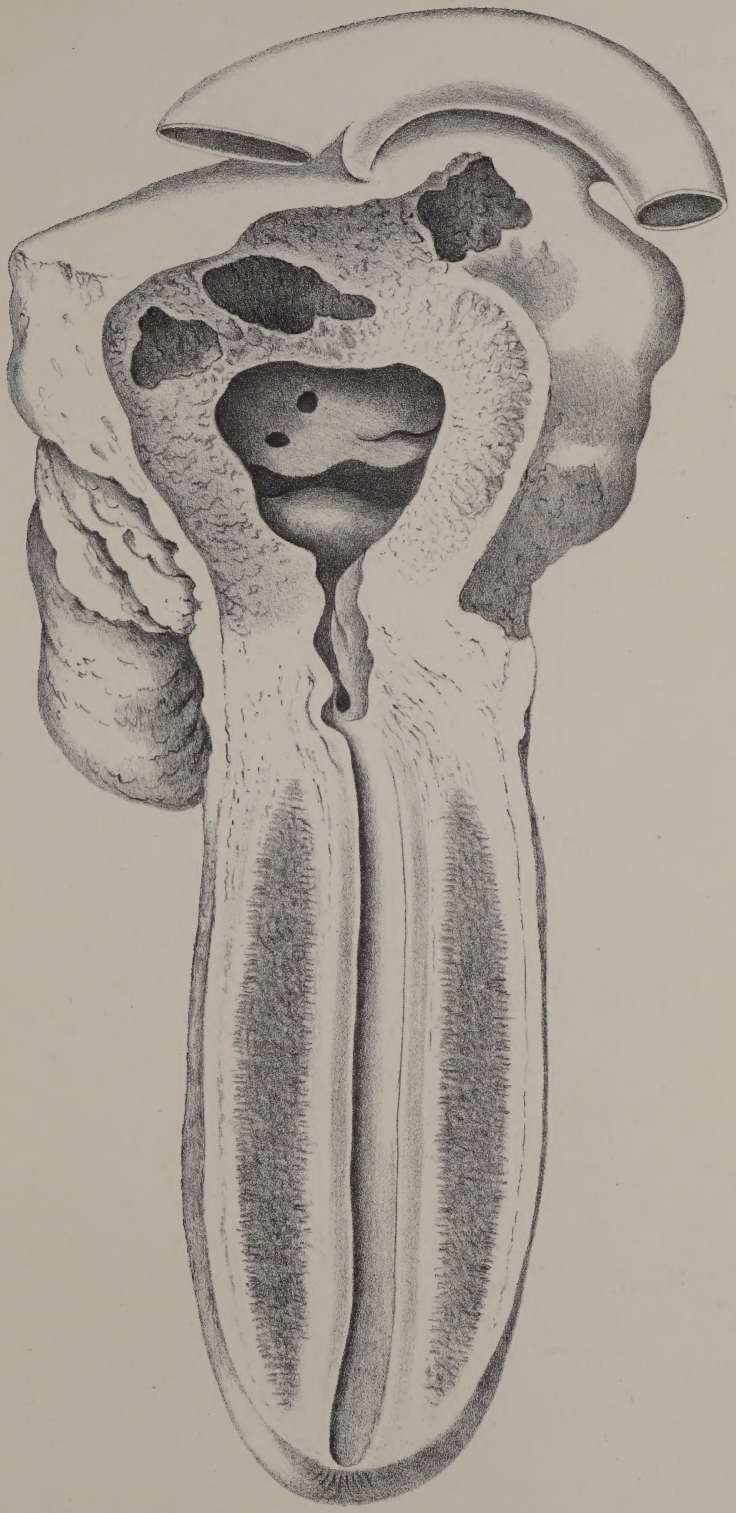

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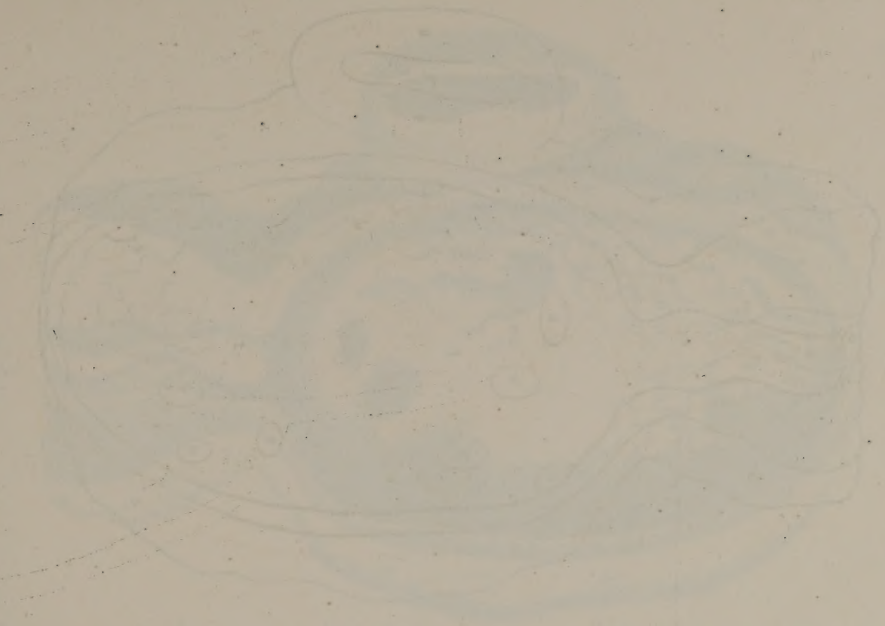

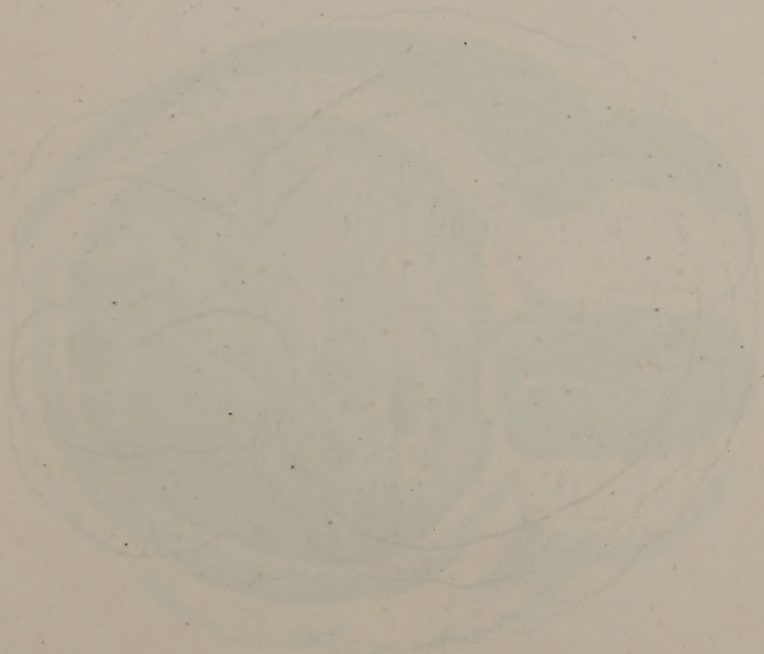

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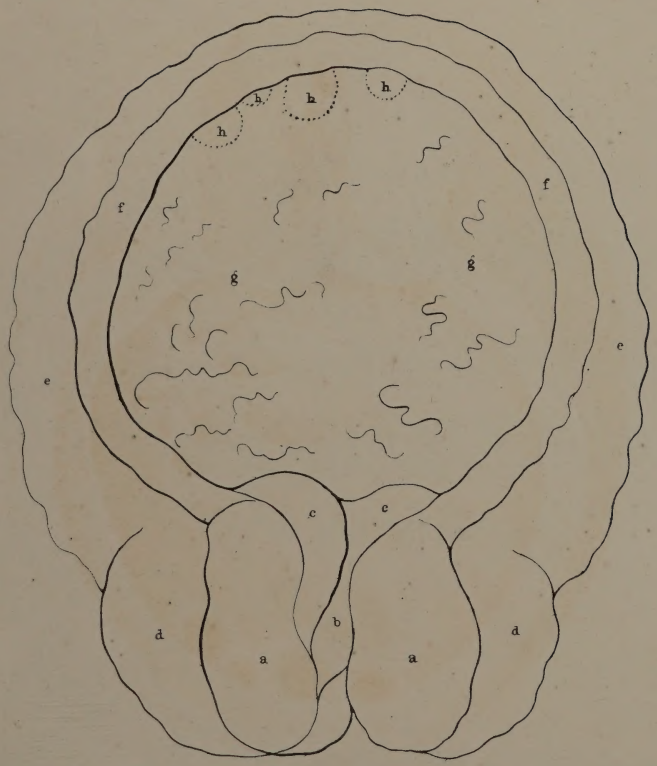

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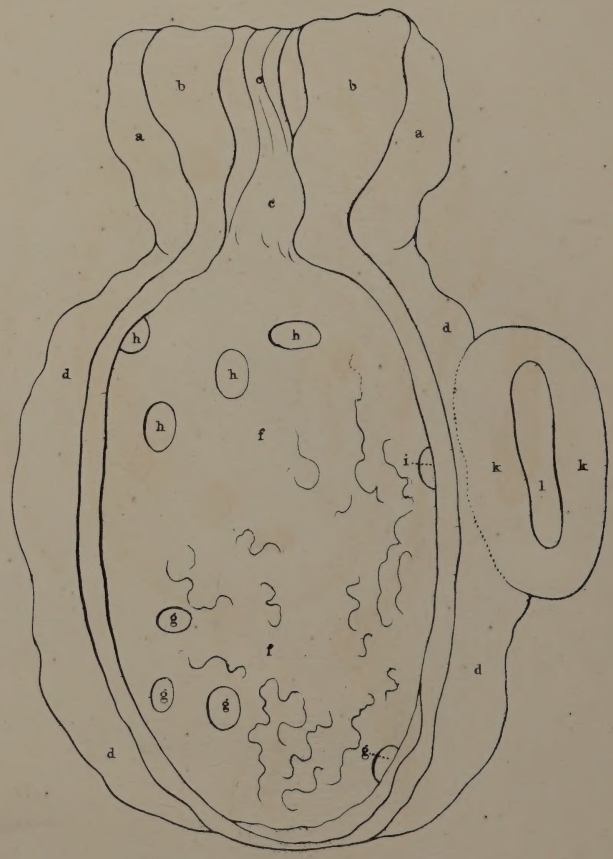

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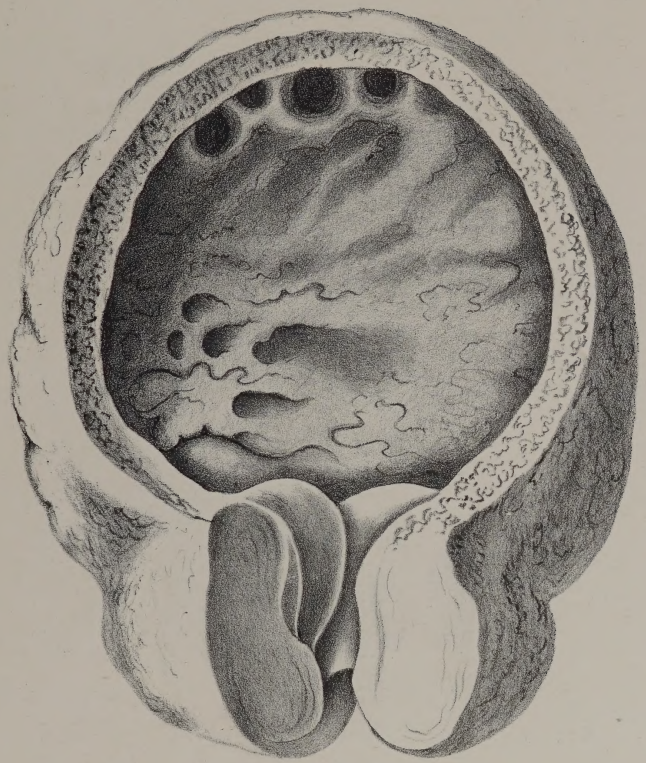

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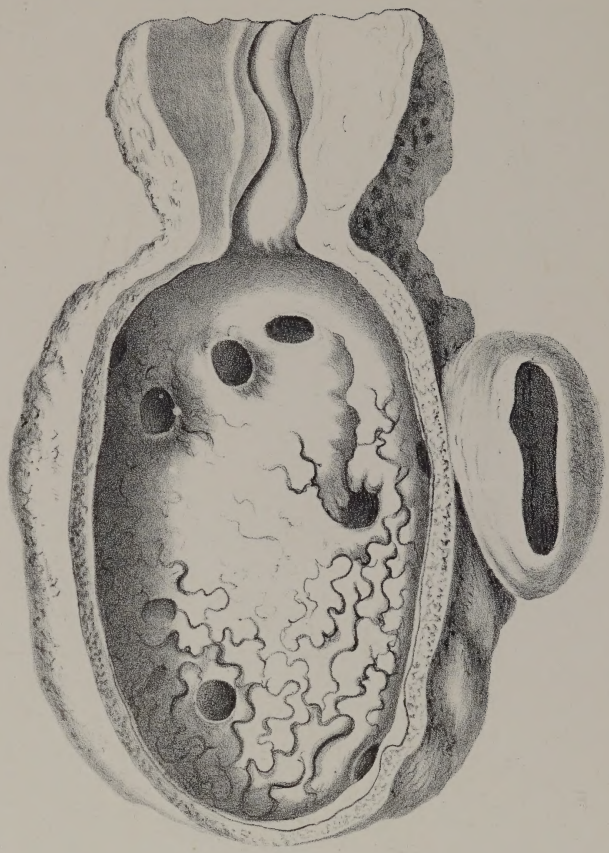

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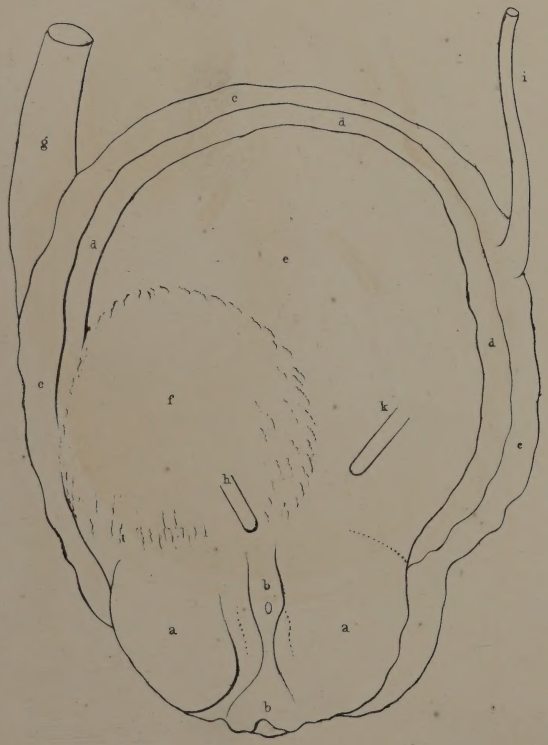

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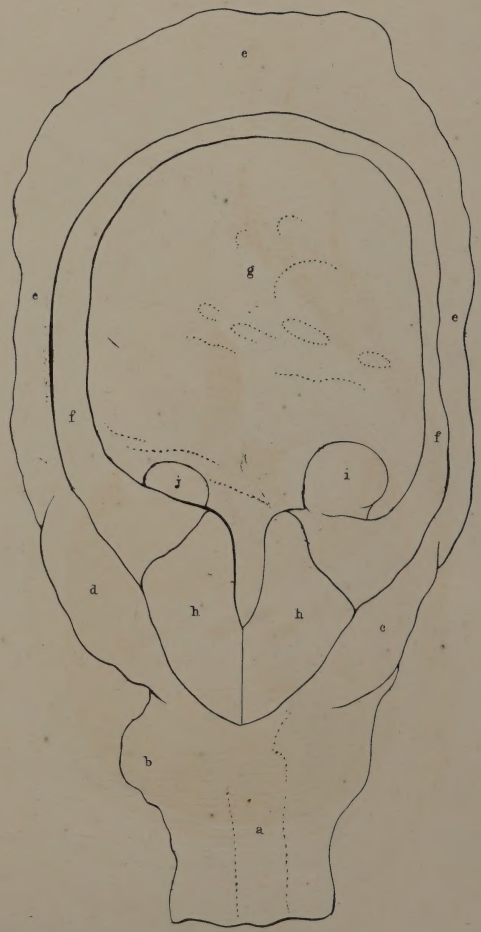

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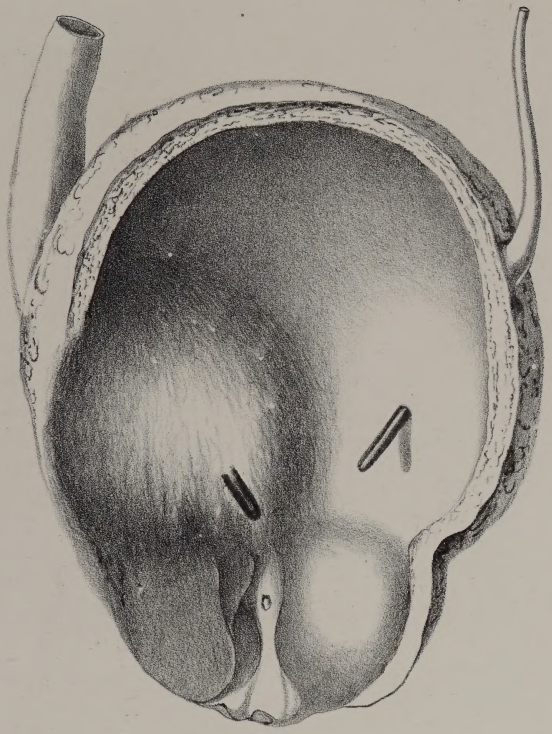

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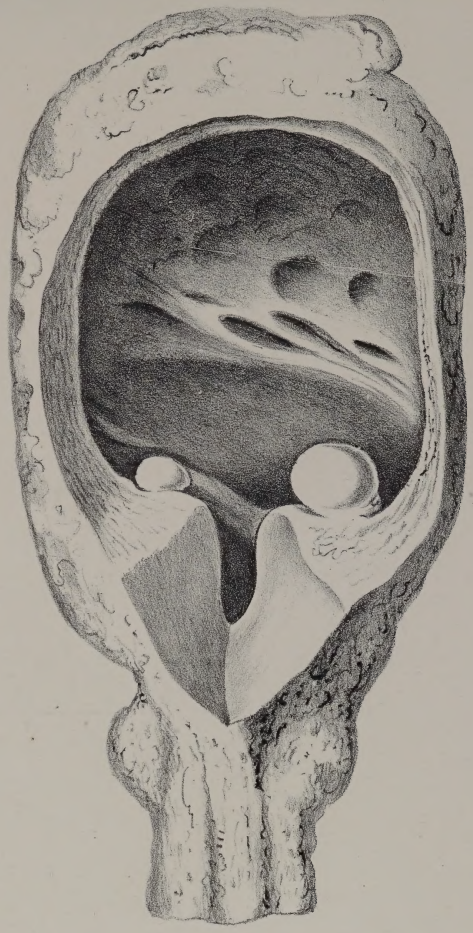

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J. M. Johnson, Lithog.r 12, Newcastle St. Strand, London.

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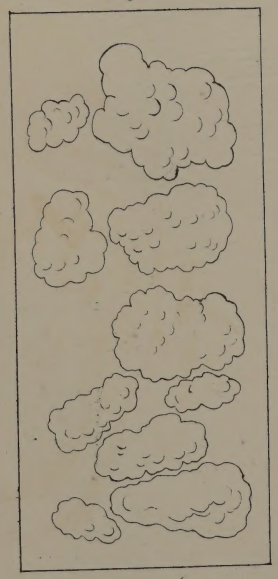

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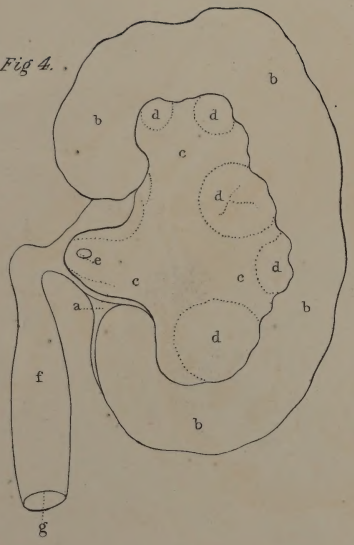

Fig. 2.

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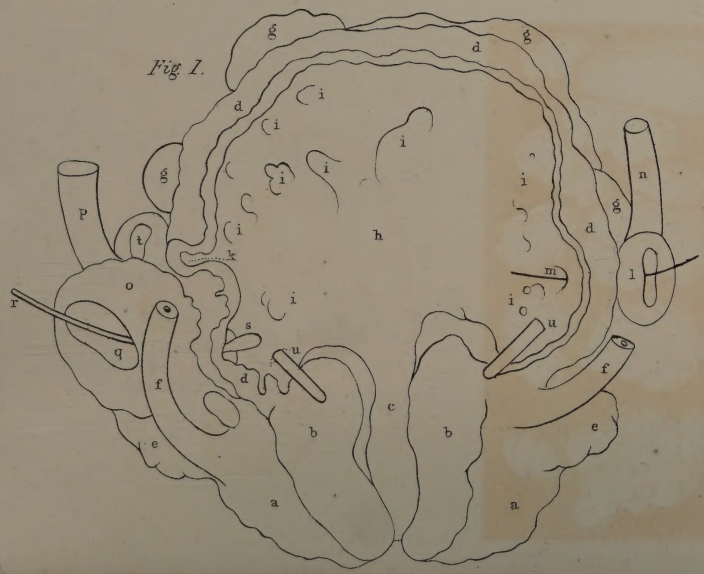

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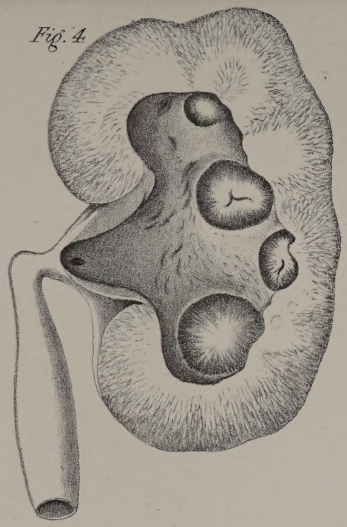

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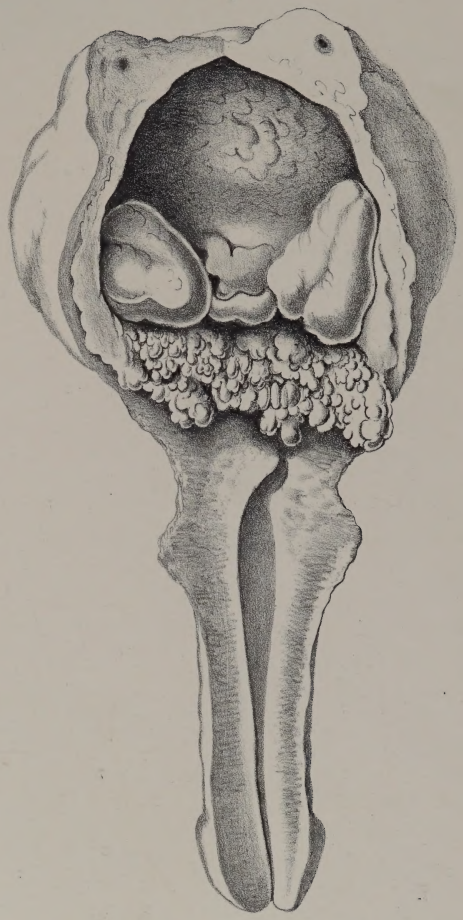

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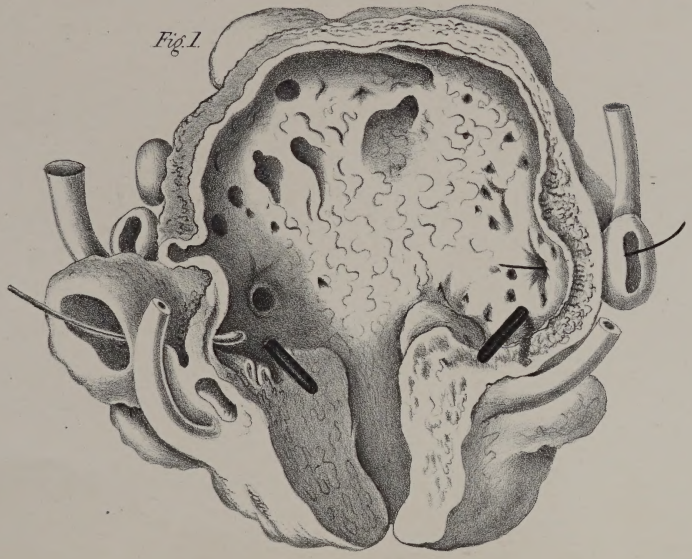

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J.M. Johnson, Lithog.ª 19, Newcastle St. Strand, London.

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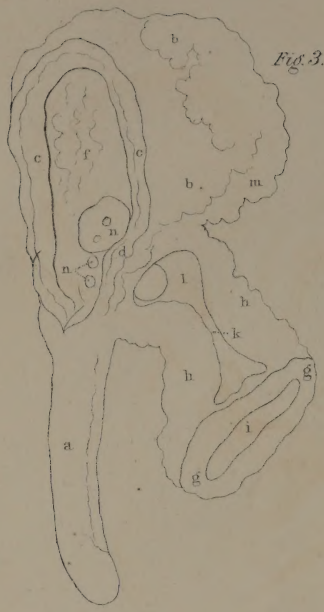

Fig. 1.

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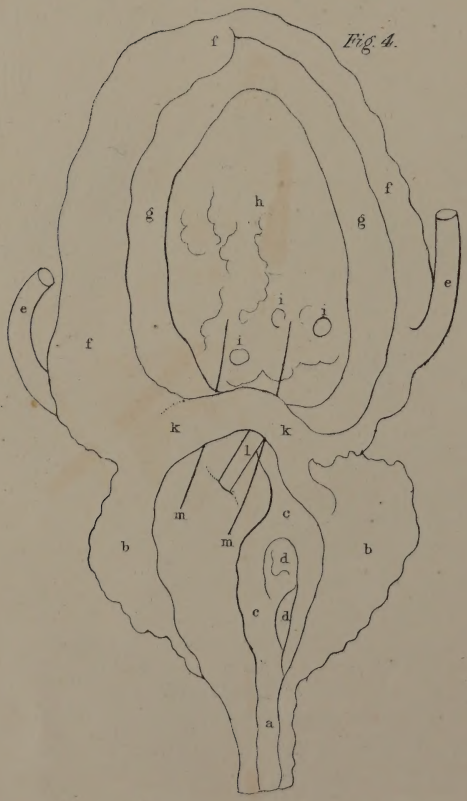

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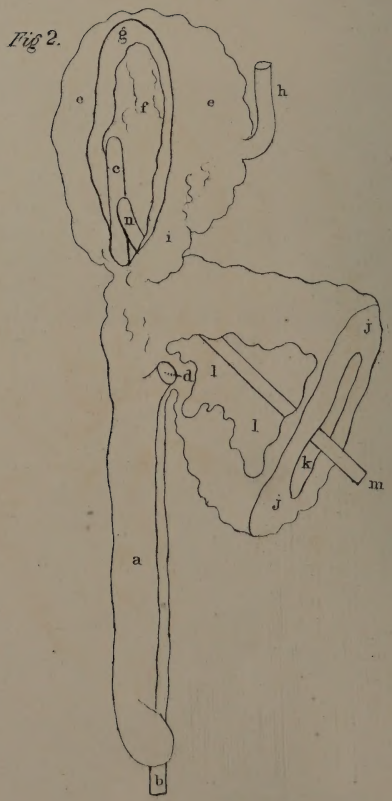

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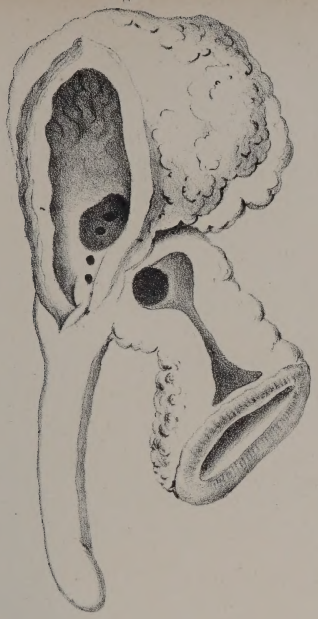

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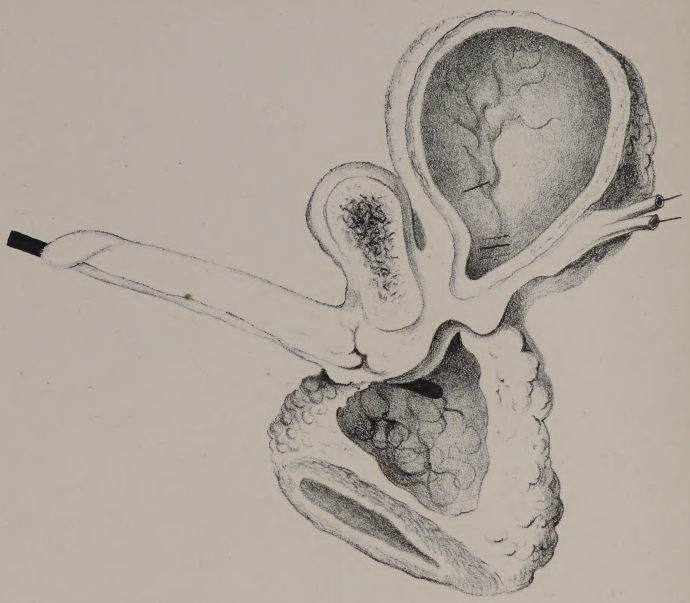

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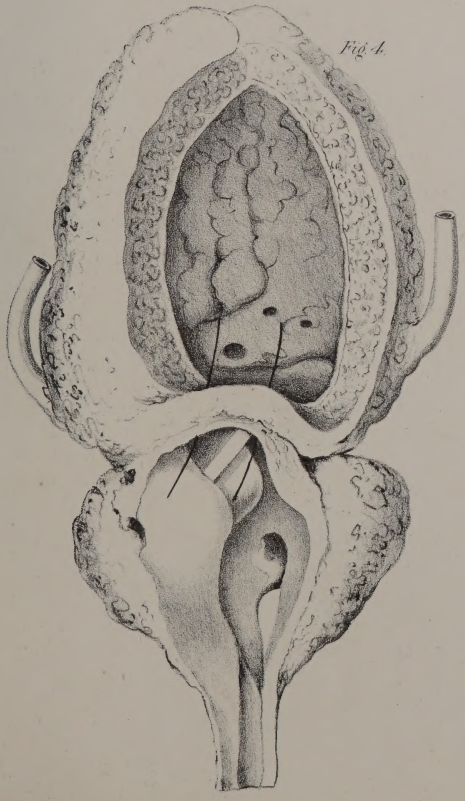

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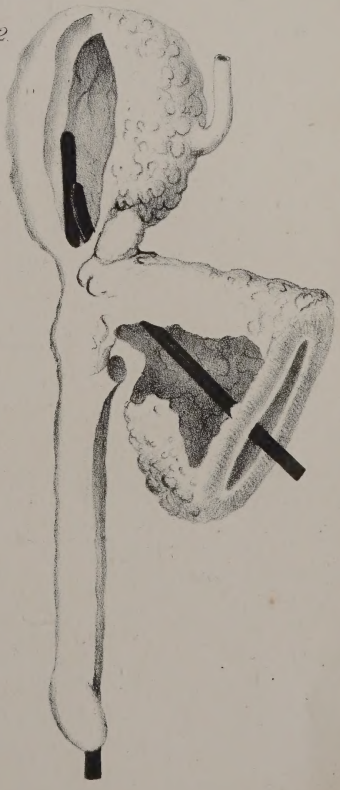

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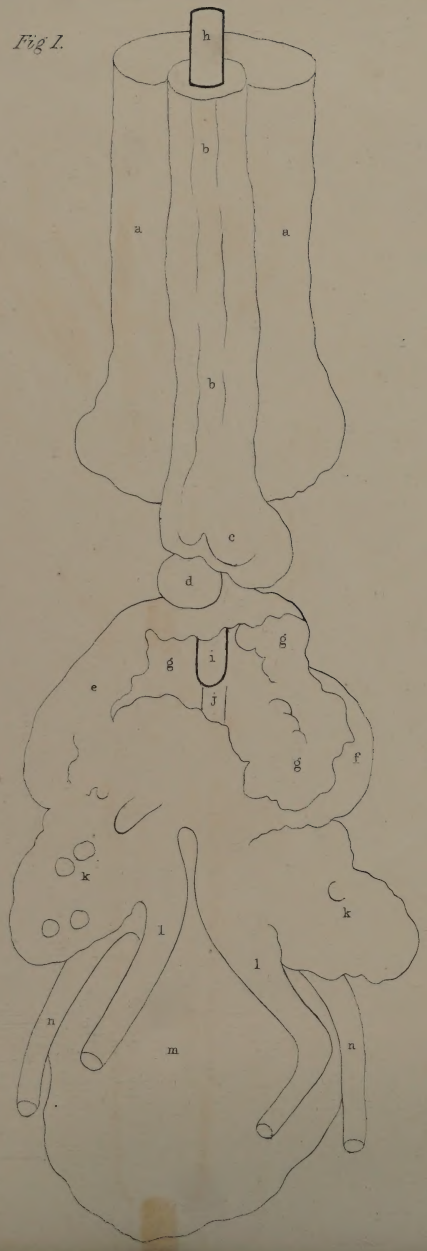
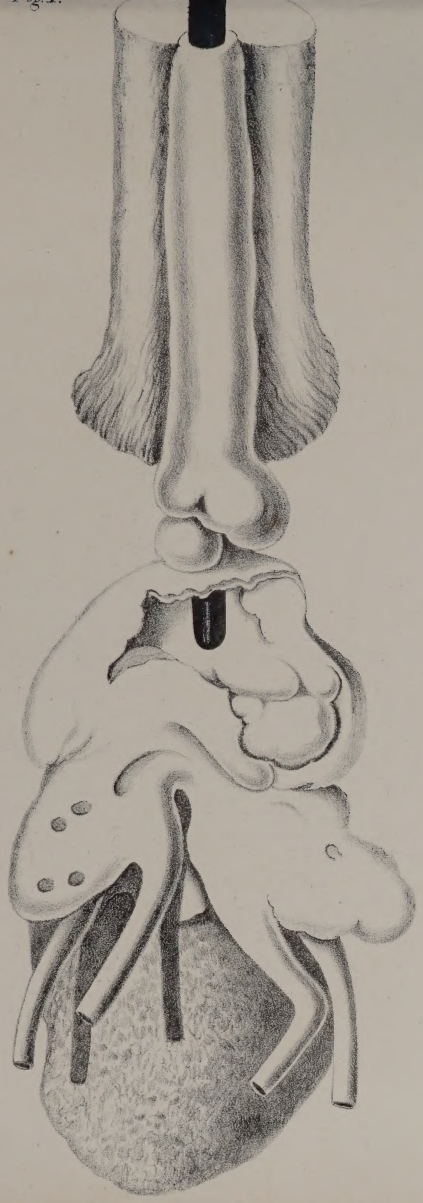


Fig. 2.

PLATE 22.

Fig. 1.



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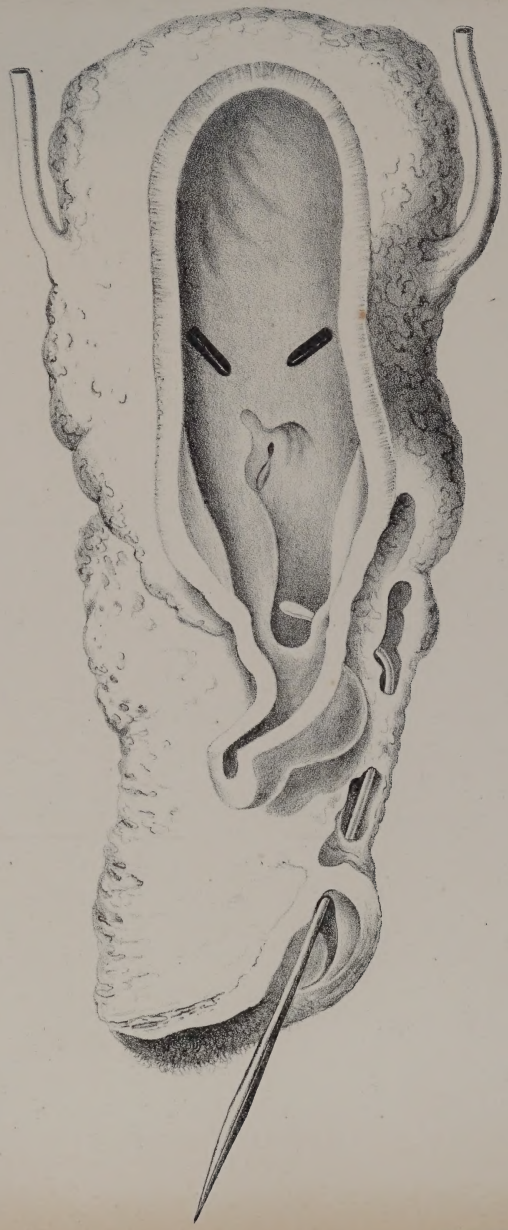

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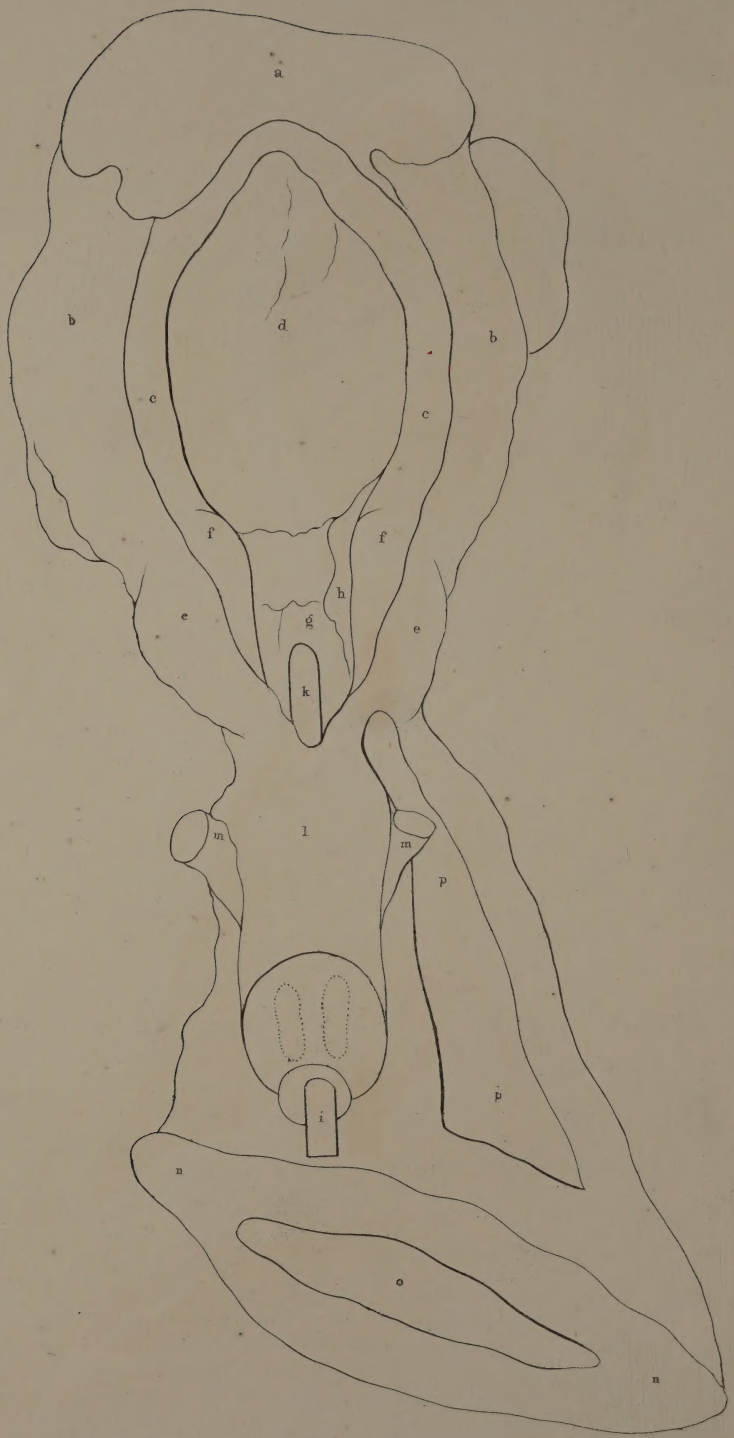
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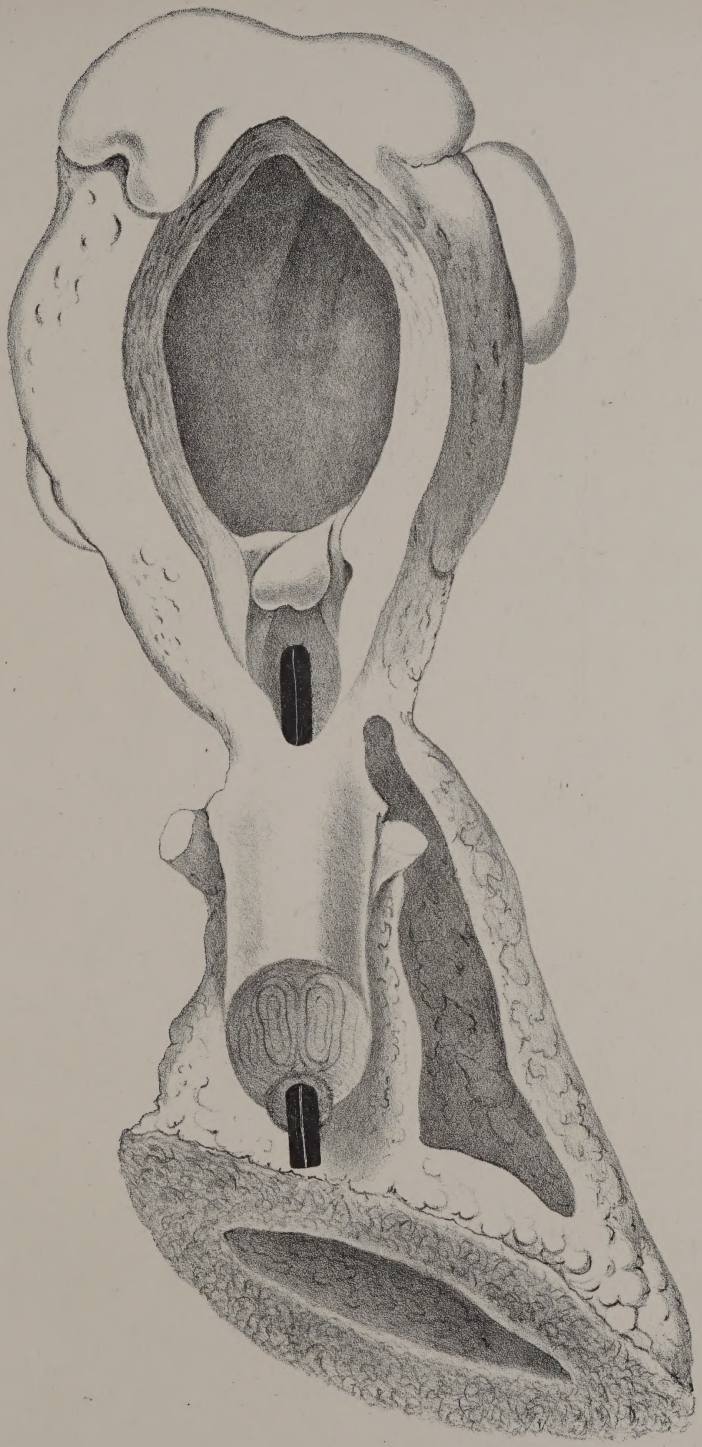

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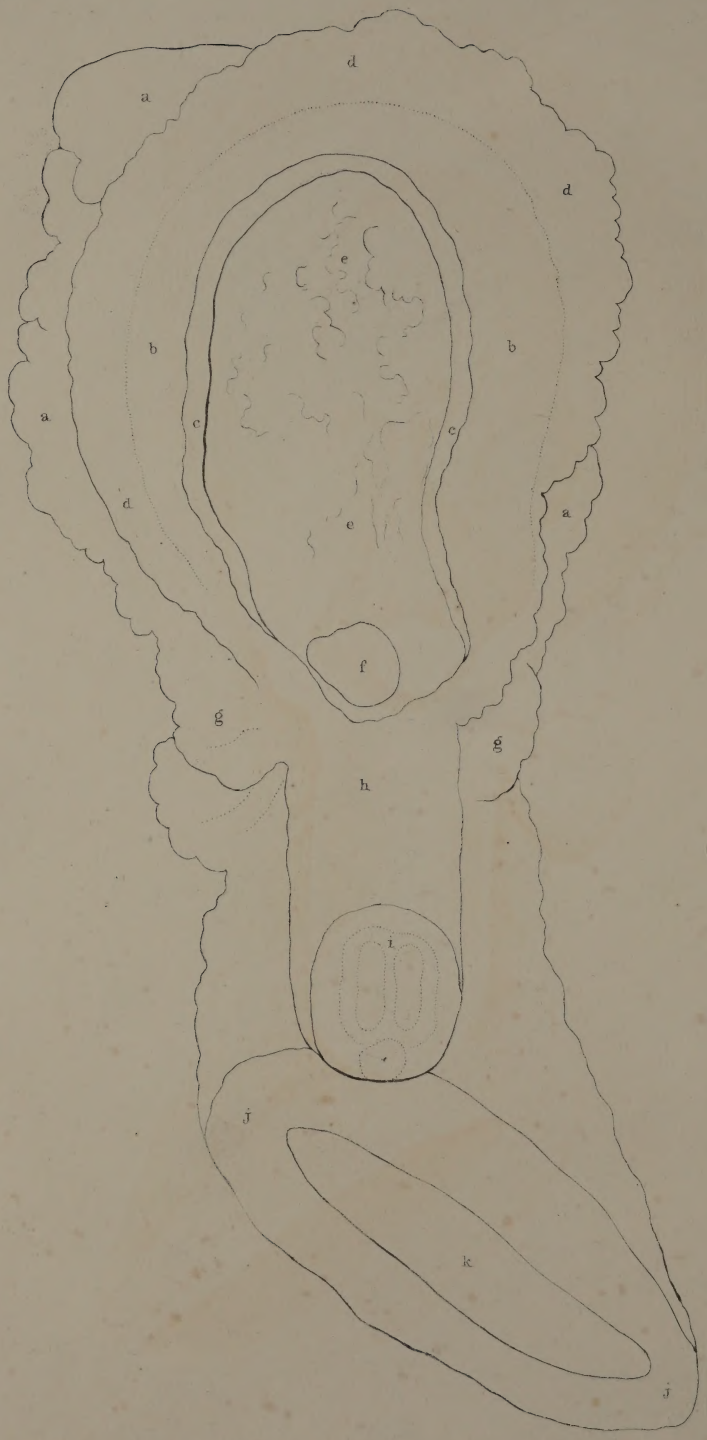
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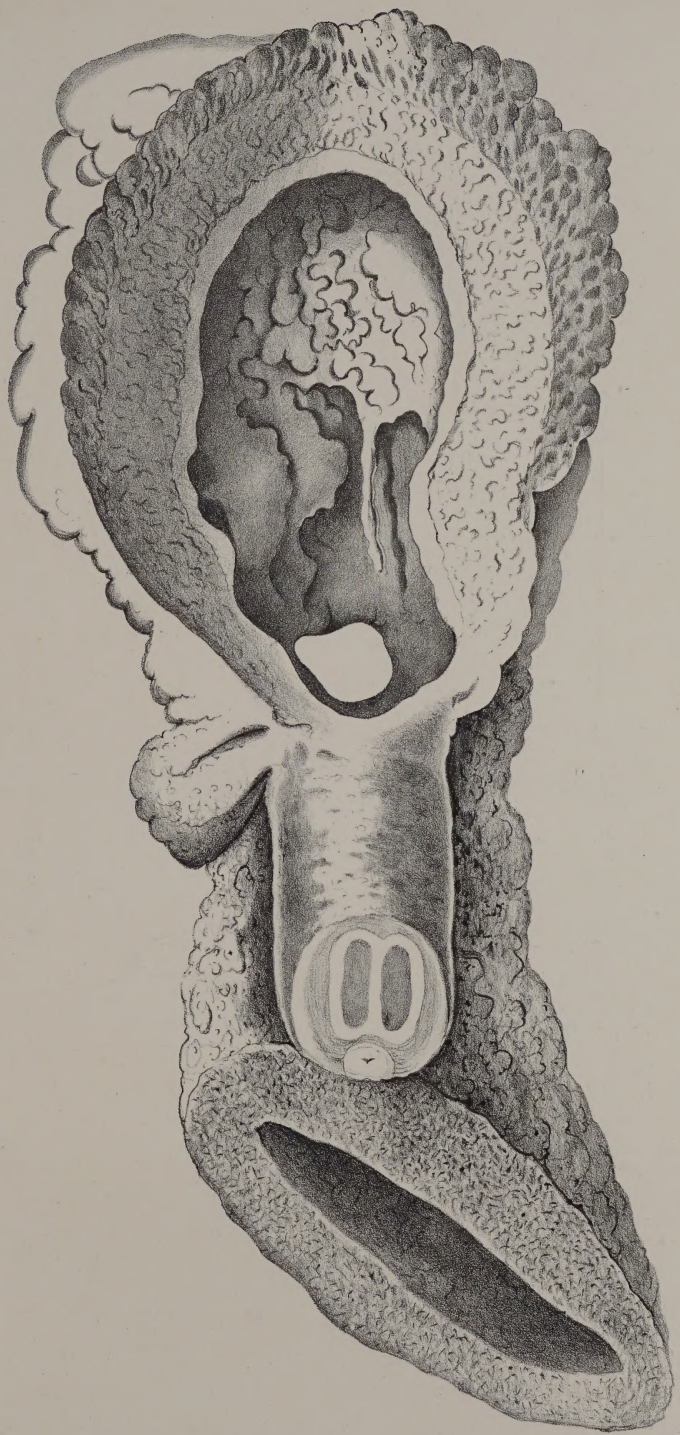

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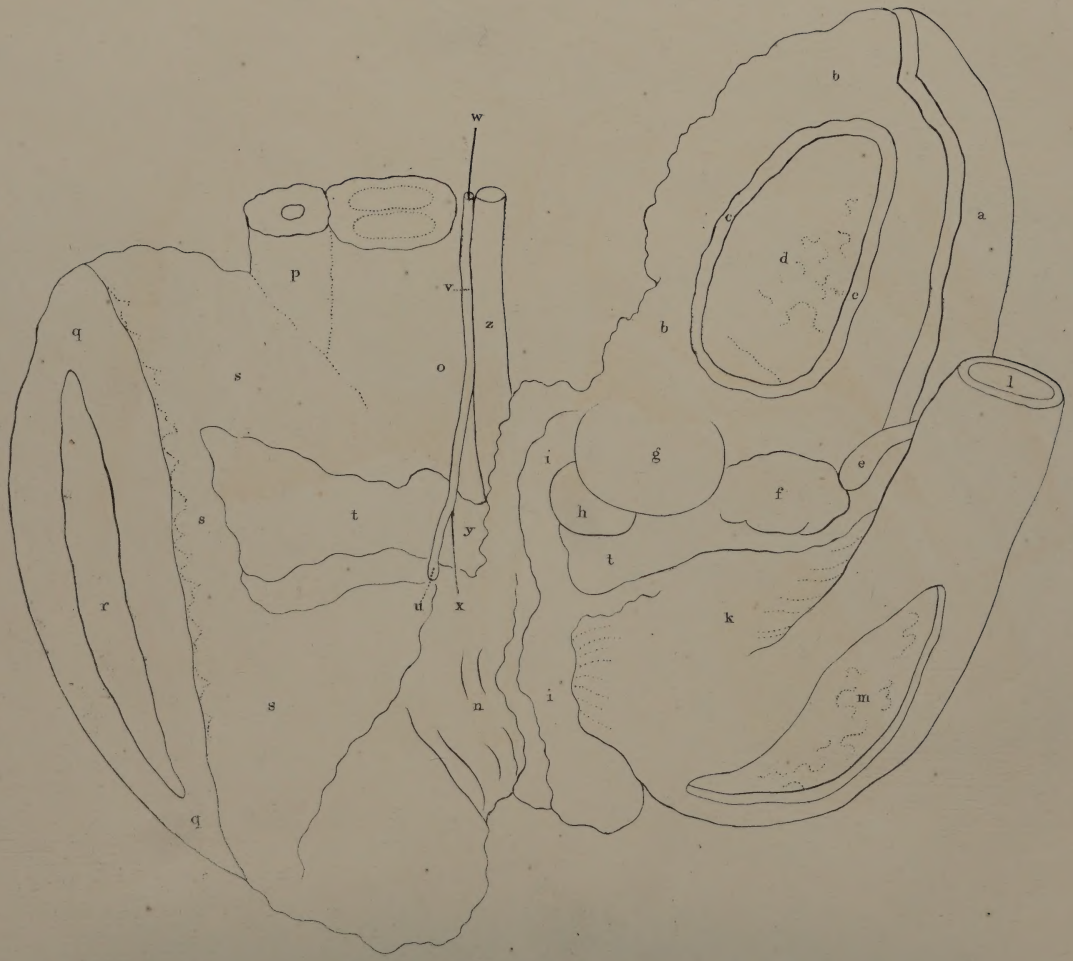
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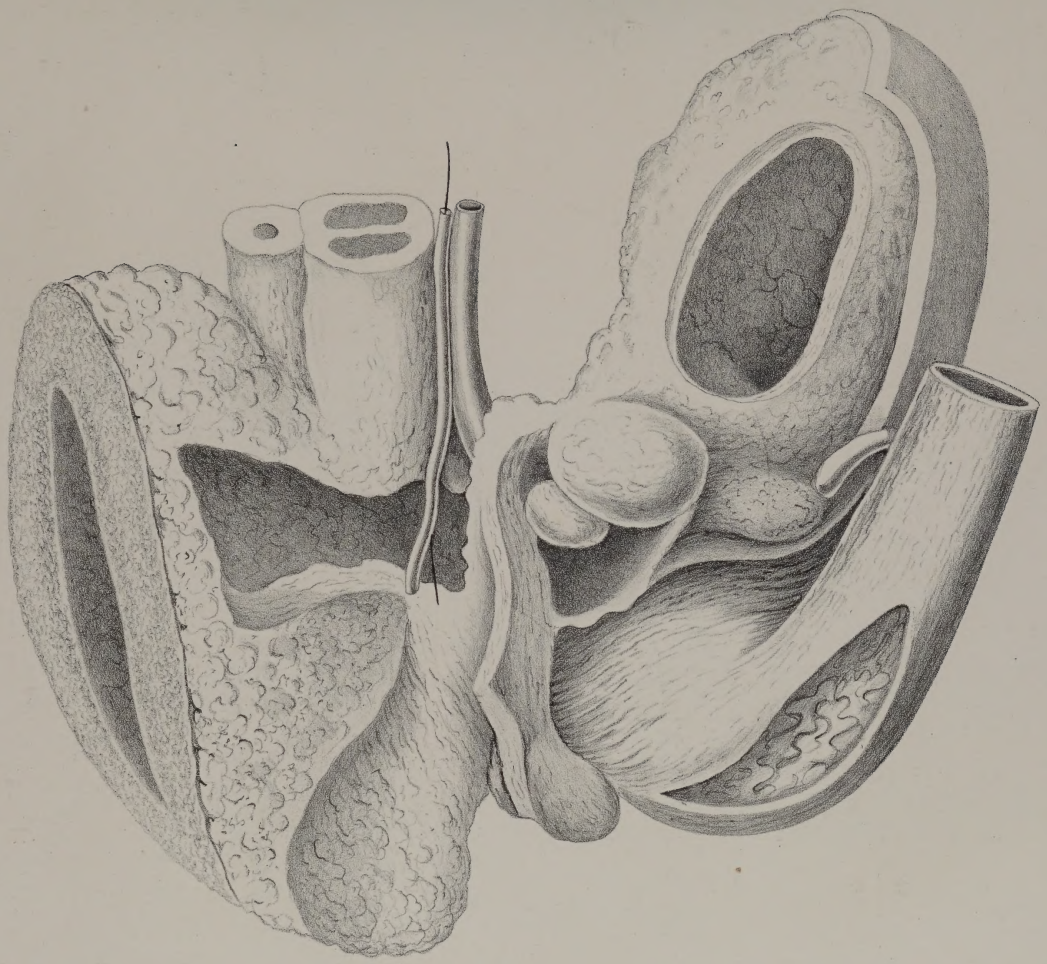

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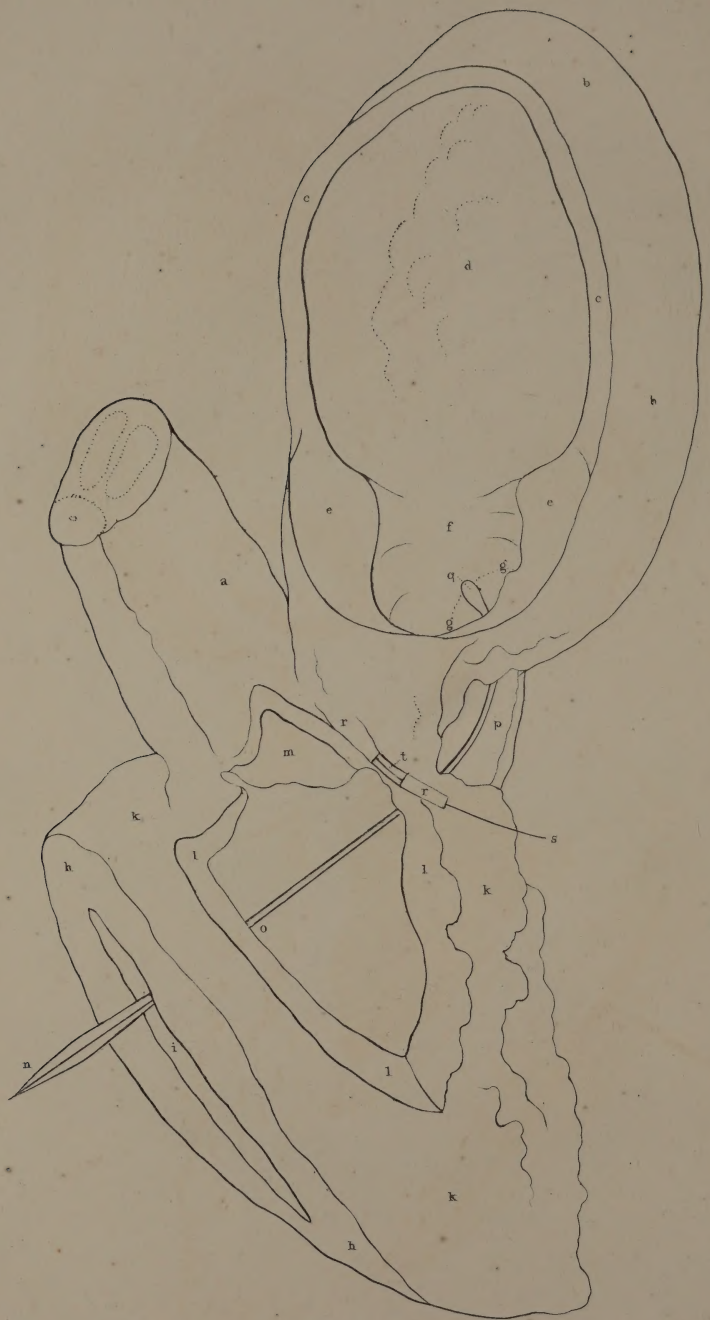
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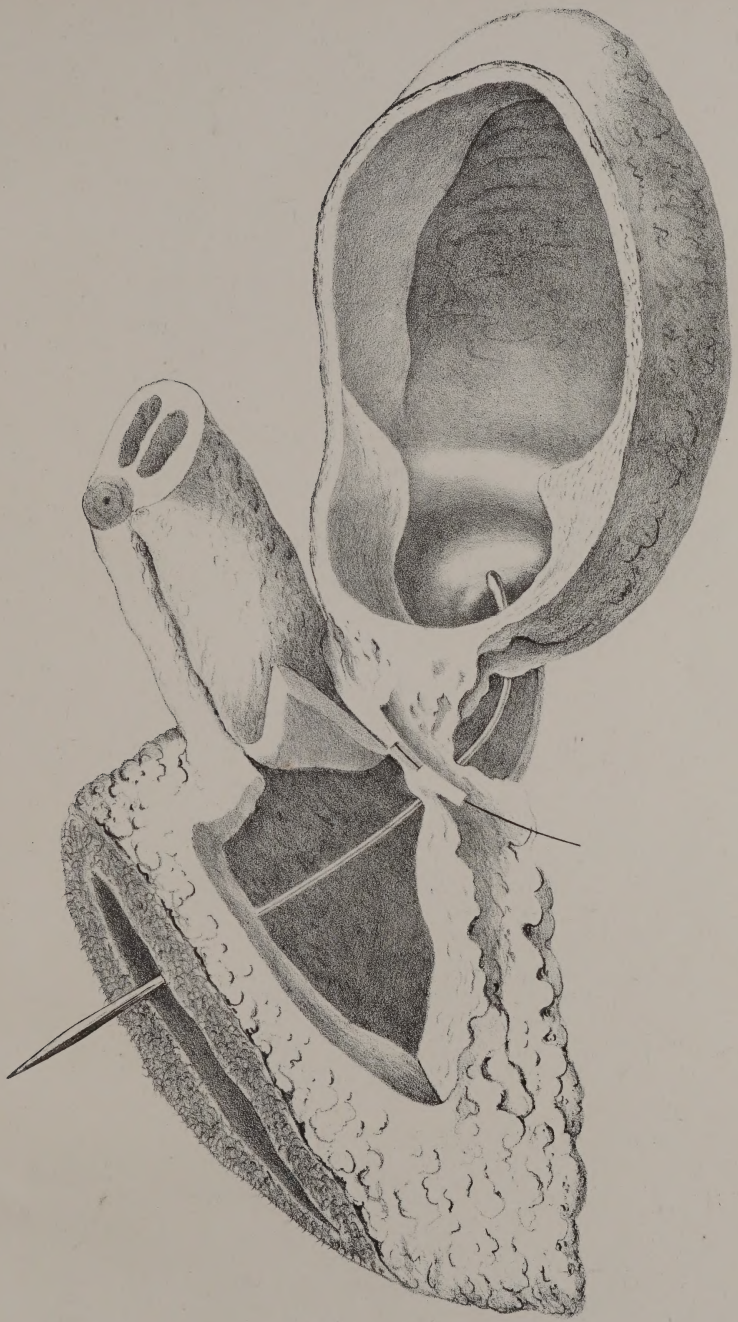

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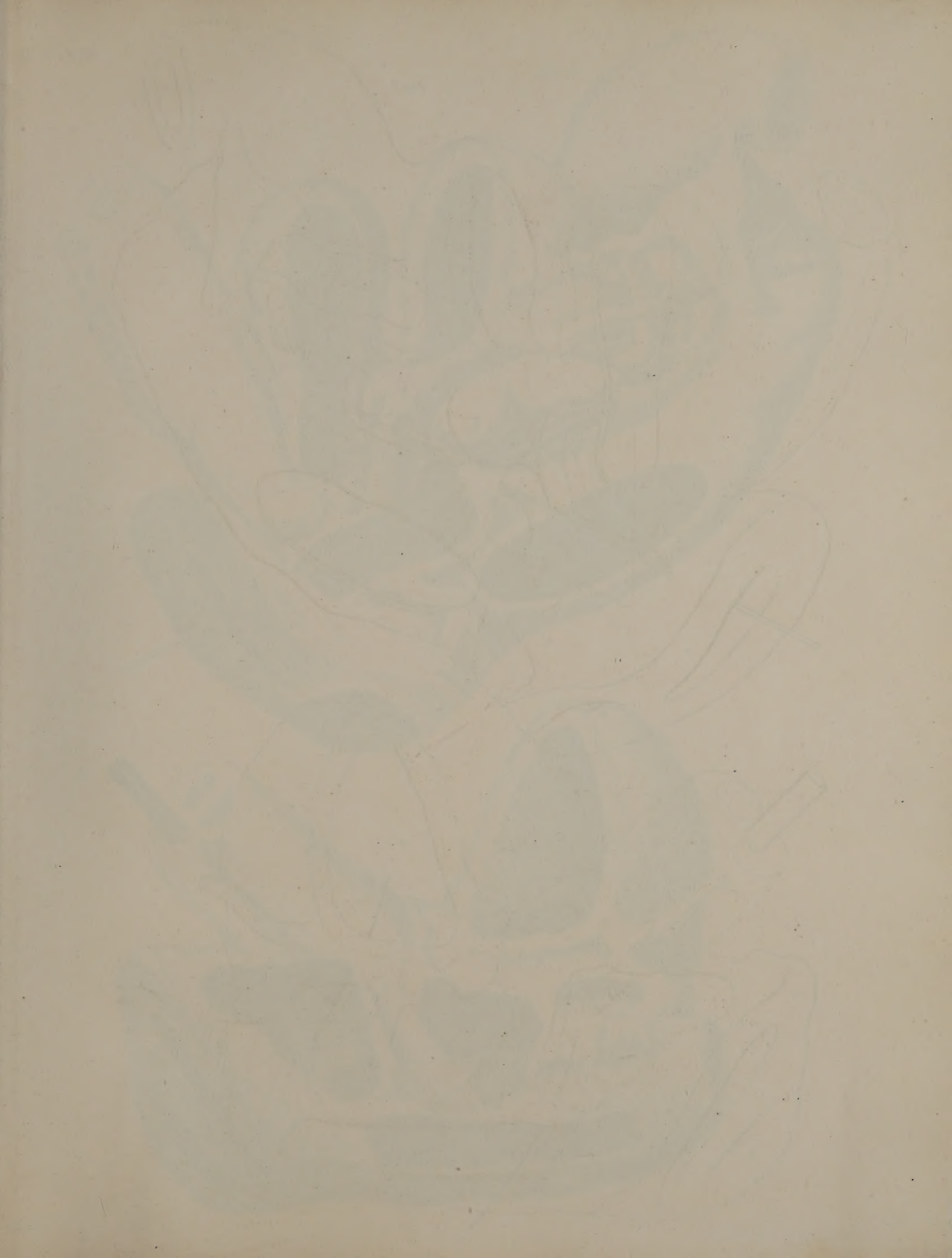

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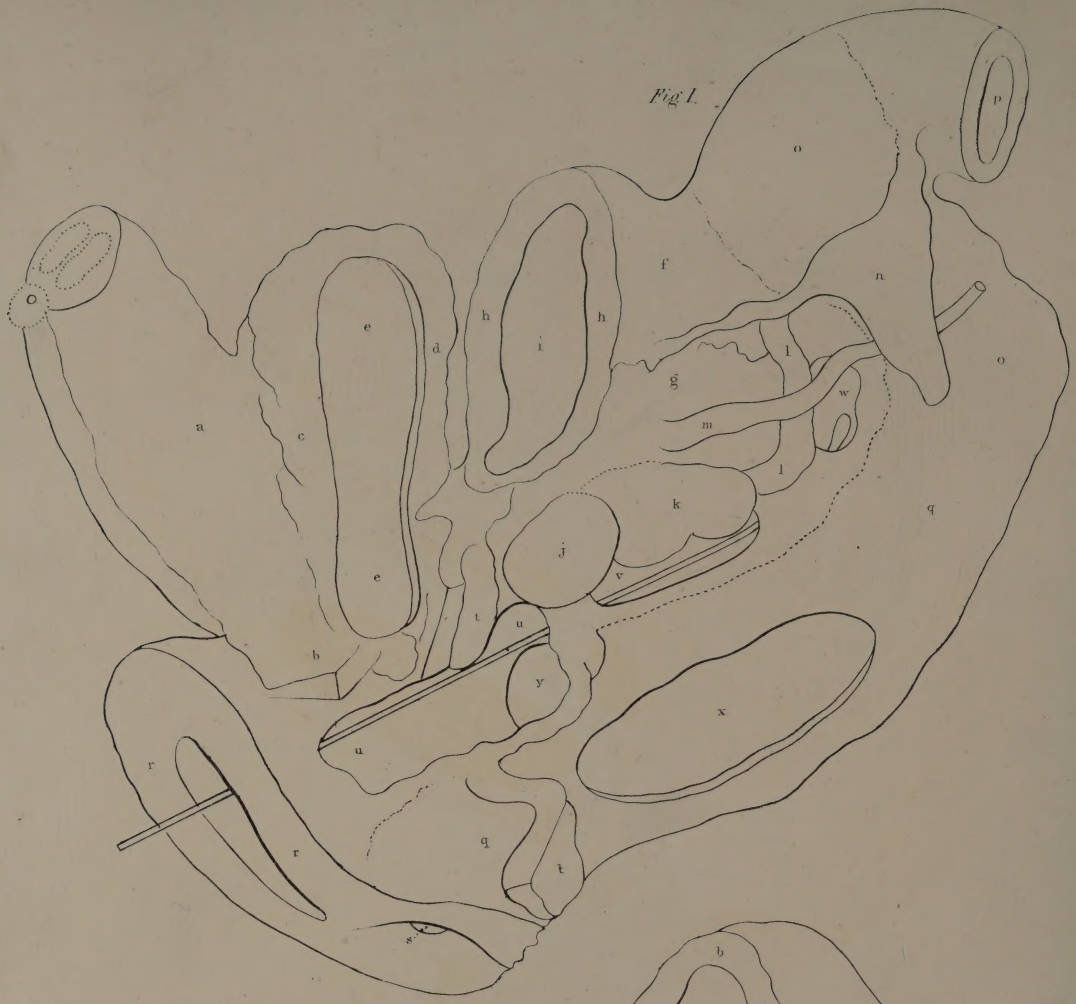
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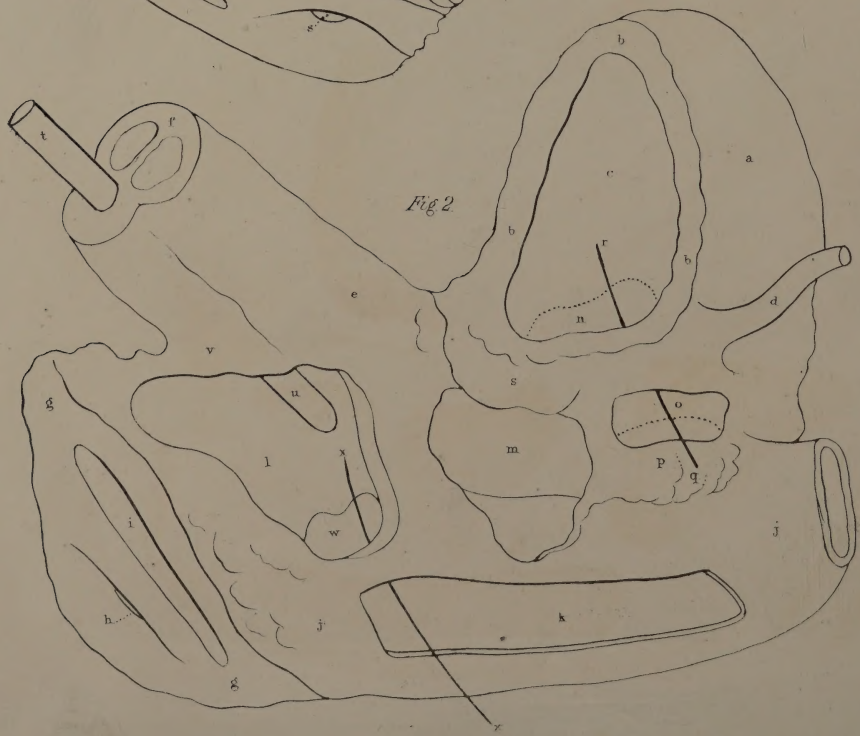
Fig 2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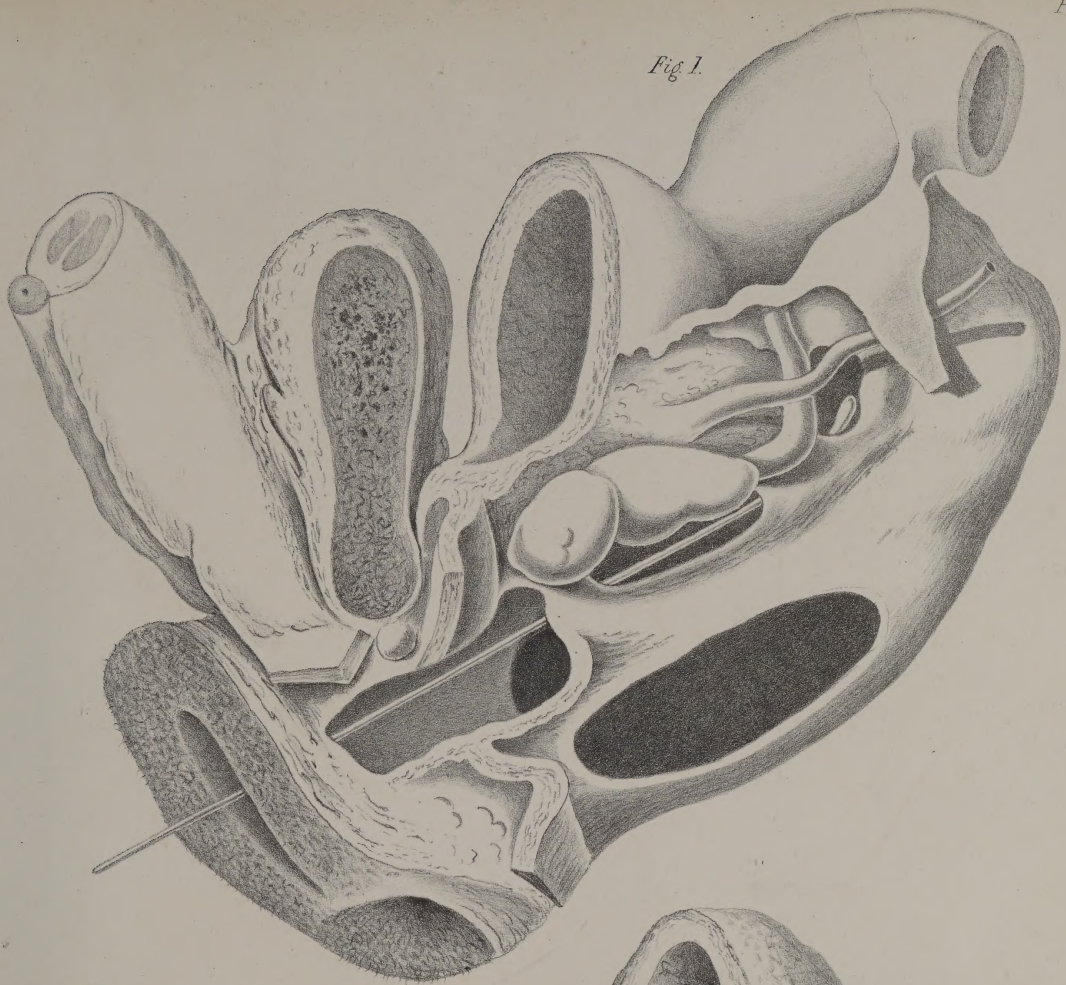

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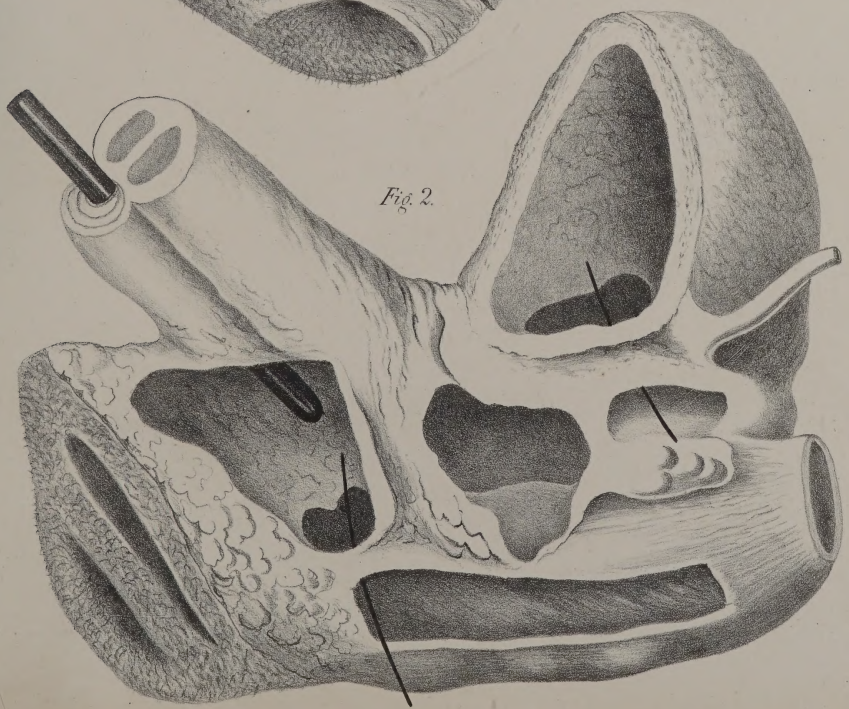

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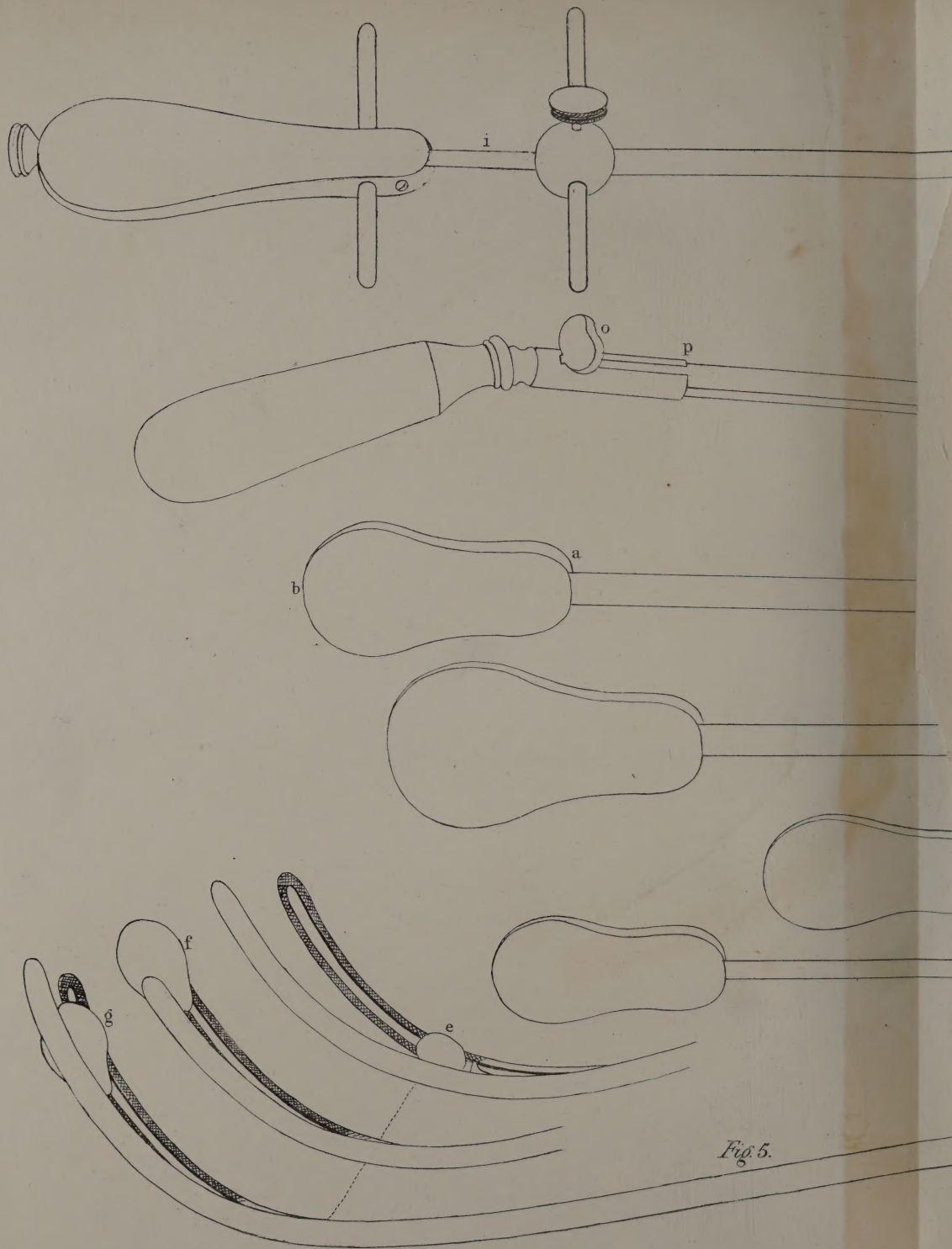

Fig. 5.

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PLATE 28.

Fig. 6.

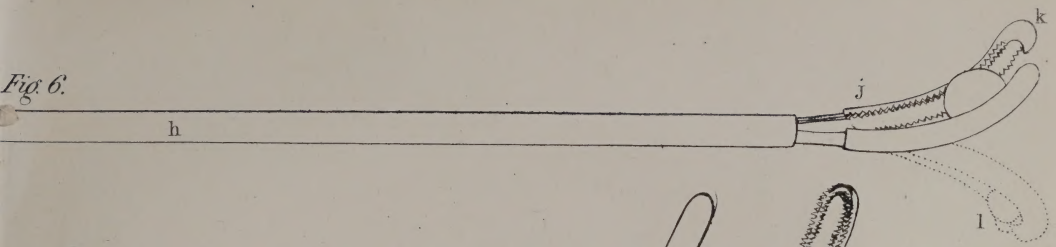

Fig. 7.

Fig. 1.

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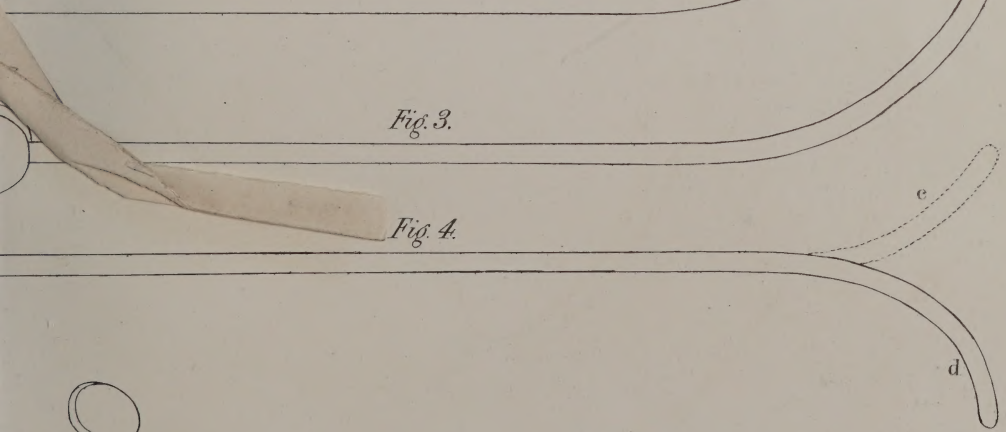

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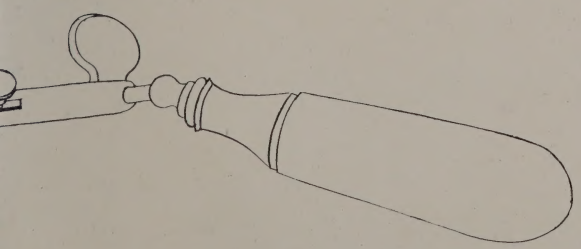

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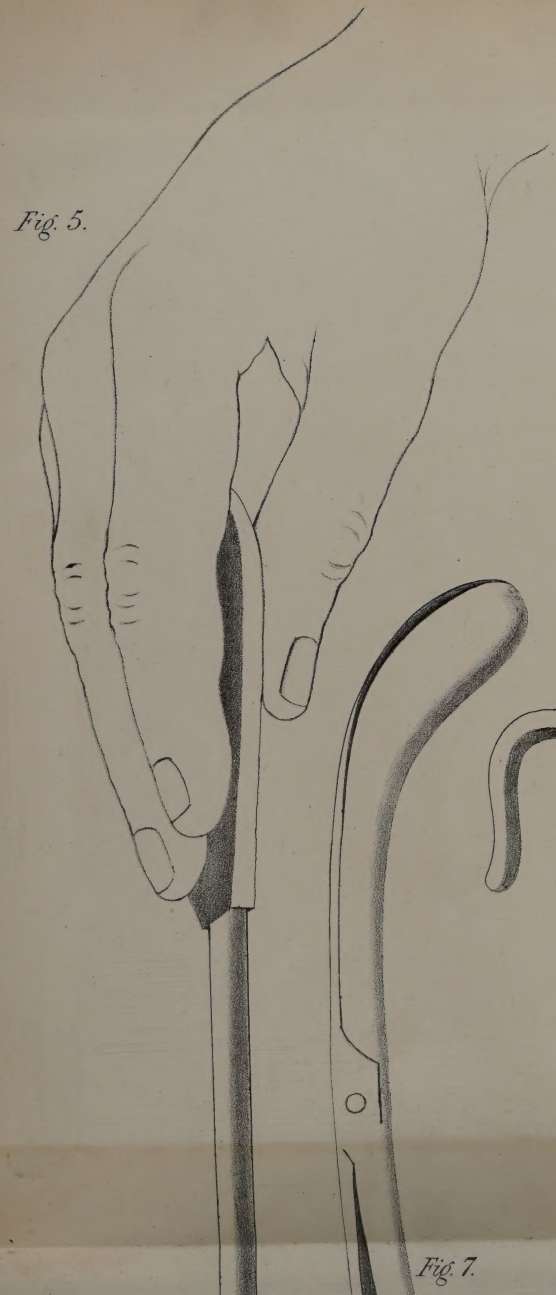

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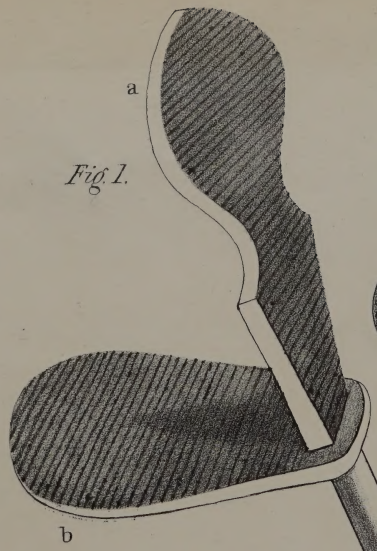

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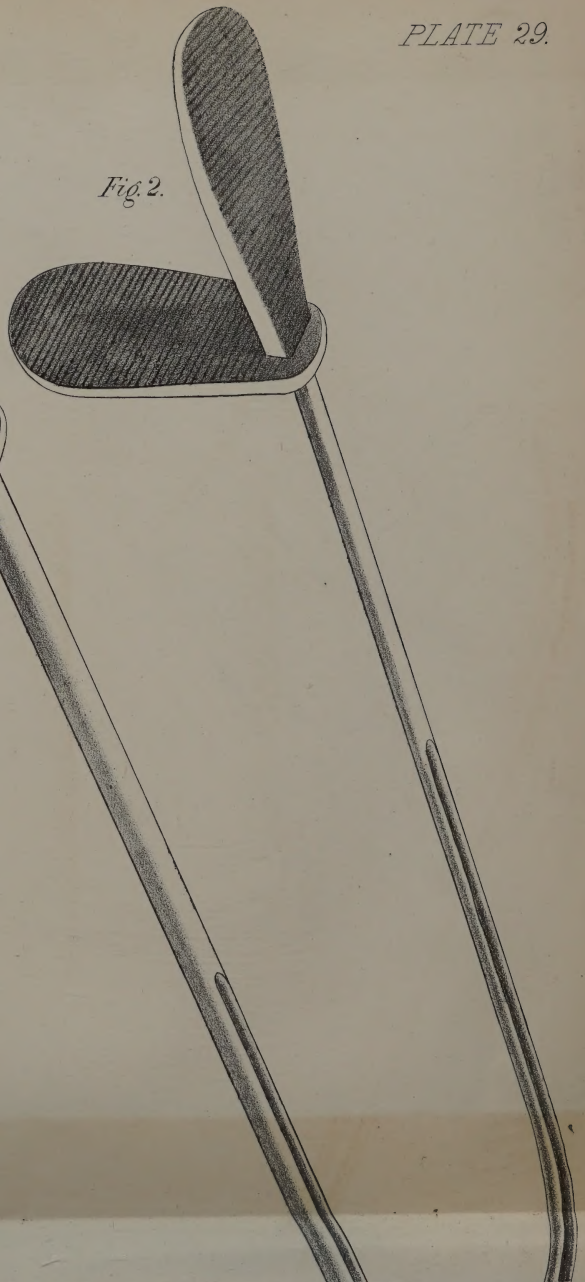

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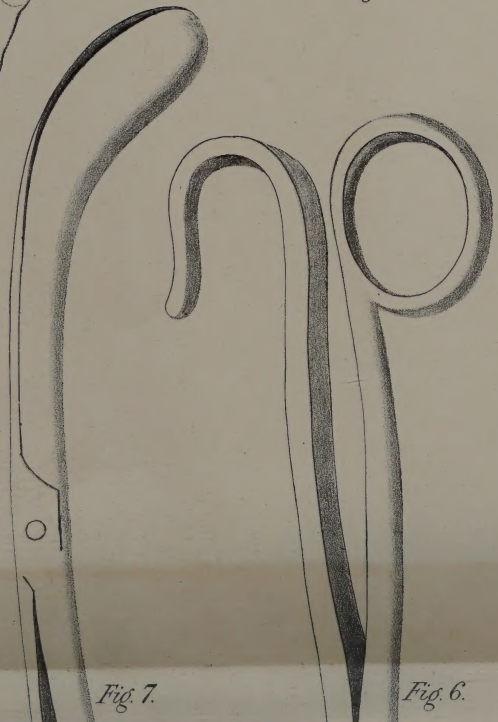

Fig. 7.

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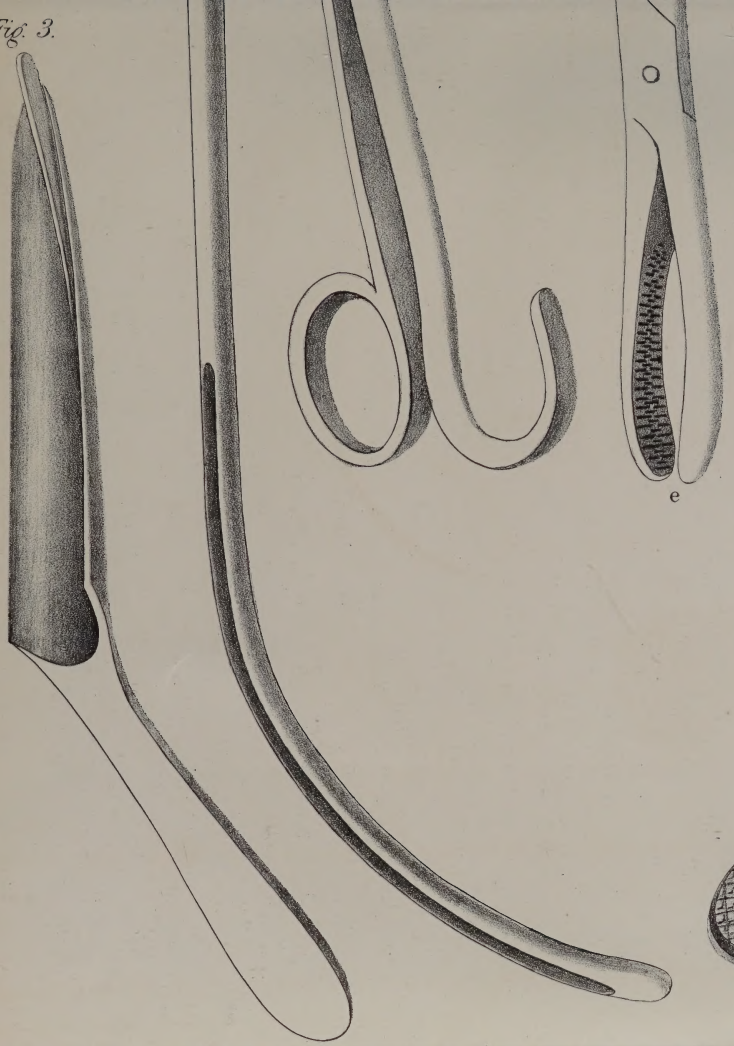

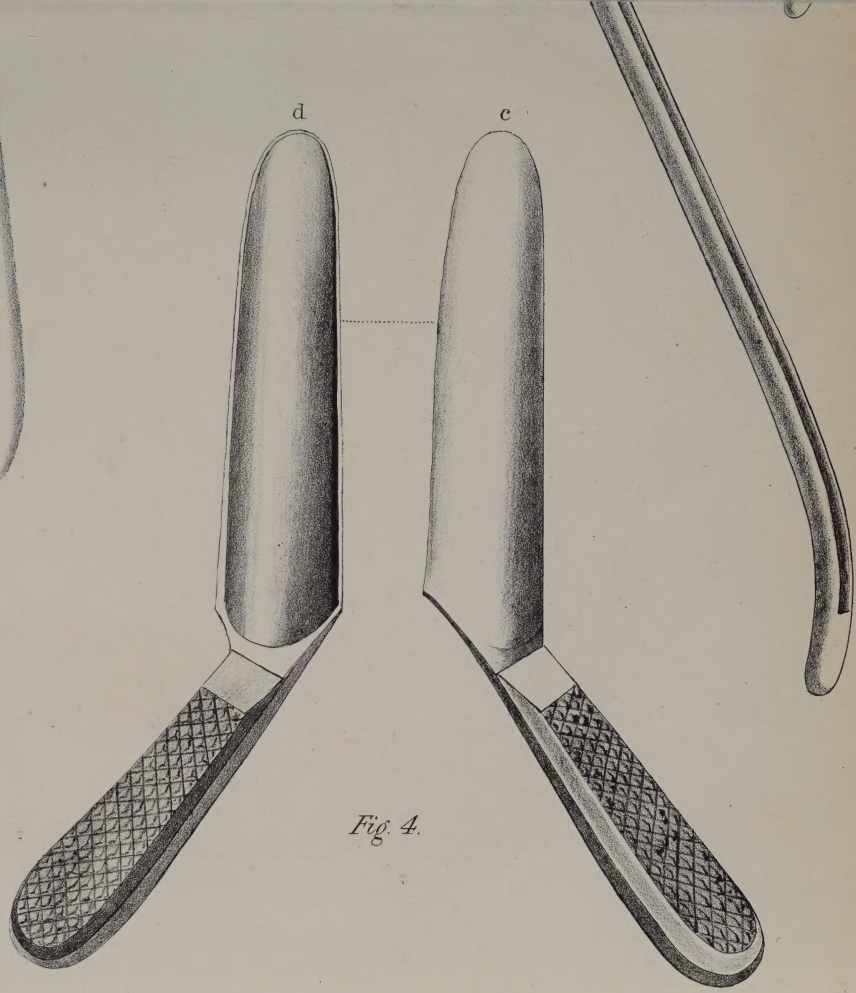

Fig. 4.

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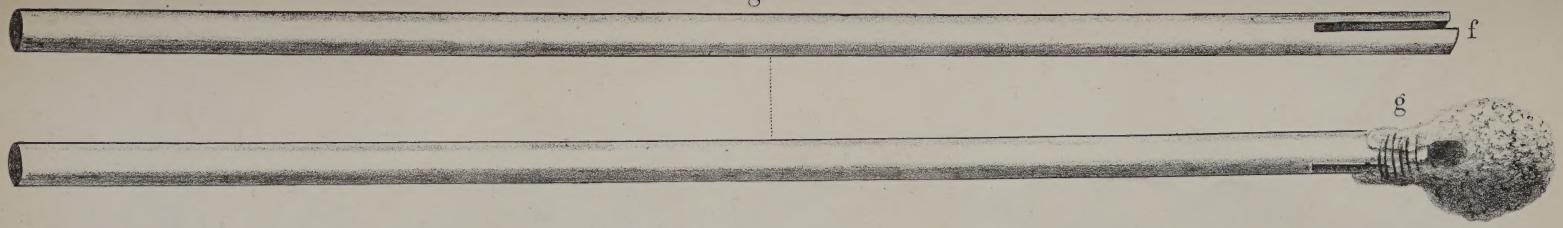

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EXPLANATION OF THE PLATES.

PLATE I.

This and the following plate represent urinary vesical calculi, and have reference to the particular shape, mechanical texture, or situation of the nuclei of such bodies.

Fig. 1 shews the cut surface of a divided calculus, upon which are seen two dark nuclei, cemented together and forming one body by surrounding deposition of triple phosphate. The entire calculus weighed nearly three drachms, and was removed by operation, from the bladder of a girl aged nine years; this double nucleus is composed of lithic acid and oxalate of lime.

Fig. 2 represents the two portions of a divided calculus, which was found *post mortem* in the bladder drawn in plate xii, fig. 2. The patient had been long confined to his bed before death, lying on his back, and this calculus, a flattened oval, was smooth upon one of its flat sides, upon which it had undoubtedly rested in constant contact with the bladder, and rough, as well as more convex, on the other; it weighed above two drachms and a half. The portion (a) has the rough outer surface presented to view, and also shews upon the cut surface the nucleus of lithic acid situated near the posterior margin. In the portion (b) the view is reversed, the smooth flat surface being forwards, with the nucleus near to it, the principal deposit of fresh substance, in the increase of this calculus, having taken place upon the posterior part.

Fig. 3. Section of a calculus, which weighed ℥ij ℥ij ℈j when removed *post mortem* from the bladder of a man aged seventy-six; he had been lithotomized nearly eight years before death, when a fragment of a broken calculus was left in the bladder, and is clearly seen on the surface presented in this figure, forming the

nucleus. The calculus is composed of lithic acid, and it had increased at the rate of above two drachms in a year.

Fig. 4. An almond-shaped calculus, removed from a female; the superior drawing is the entire calculus; the inferior is a section, exhibiting a mulberry-nucleus near one end (c,) the external deposition of phosphate of lime taking place almost exclusively in the direction (d;) the causes determining the calculus to increase in this shape were not ascertained.

Fig. 5. A calculus accidentally broken through its centre, so as to shew a cavity in the place of a nucleus, which may be explained by a small portion of lymph or blood having been the nucleus upon which the concretion took place, and which has dried up since the calculus was exposed to the air, giving rise to the present appearance. This was one of four calculi that completely filled the bladder depicted in plate ix, fig. 2; the external white layer is fusible, the rest lithic acid.

Fig. 6. A calculus of a globular shape, weighing two ounces and a half, which filled the bladder, represented in plate xiv, fig. 1, at the time of the patient's death. The entire calculus (e) exhibits a great part of its surface smooth, on which it rested in contact with the bladder during a long period of recumbency, and the rest is rough at (f)—the section shews the nucleus near the margin at (g,) the principal additional concretion having taken place on one side of the calculus, where the surface was exposed to the urine. The firm and central part is phosphate of lime, and the outer more porous deposit is fusible.

Fig. 7. A calculus (h) of the size and shape of a hen's egg, and with a surface smooth as its shell, found at death in the bladder drawn in plate xvi, fig. 2, where a large tumour prevented it from falling on the neck of the bladder so as to occasion the symptoms of stone. A section of the calculus is represented (i;) the central dark portion is lithic acid, and the white outer circle phosphate of lime.

Fig. 8. A calculus removed by the high operation, from a boy aged fifteen years; it weighed ℥j ℥iss, and the operator, who presented it to me, thought it was adherent to the bladder at the two extremities (j, k,) upon the latter of which there was some blood; a section of the calculus, however, proves this opinion to have been incorrect, because it shews that the deposit at the extremities took place

more recently, and after the rest of the stone was formed, which could not have happened had there been adhesion to the bladder at those points. It seems probable that the larger end, (k) and (m,) corresponded to the fundus of a very contracted bladder, and the apex, (j) and (l,) to the commencement of the urethra. The dark portions are oxalate of lime and lithic acid, the white are fusible.

Fig. 9 refers to two calculi, found after death, in a gentleman who was about to submit to lithotomy; but the stone, previously ascertained to be in the bladder, could not then be felt. The small brown calculus (n,) weighing two scruples, and of firm texture, is lithic acid; it was loose in the cavity of the bladder. The larger calculus, of which a section is represented (o, p,) weighing four drachms two scruples, was partially sacculated, being fixed in contact with the bladder by an extensive smooth oval surface, an inch and three quarters in its longer diameter, where it ceased to grow, the rest of the concretion taking place upon the parts having free access to the urine: upon the smooth or adherent surface, part of a firm brown lithic acid stone is seen (o,) precisely like the smaller loose stone (n,) and being undoubtedly the nucleus or first formation of the larger concretion. Upon the divided surface of each portion the lithic acid nucleus is seen, placed near the margin of the large oval surface of the rest of the stone, which latter is fusible.

Fig. 10. A calculus of a singular oblong shape, weighing about seven drachms, removed on dissection from the bladder which is represented in plate xvi, fig. 1. The entire calculus (q) is fusible; the section (r) shews a white dense nucleus upon the cut surface, composed of phosphate of lime with a very little triple phosphate. Is it not probable that this nucleus formed in the bladder, which was diseased, on account of bad stricture of the urethra? we usually find phosphatic deposits in a bladder having a morbid inner membrane, proving the influence of its secretions in the formation of them.

Fig. 11. Nine calculi, weighing above seven drachms, removed from the bladder of a patient aged sixty-six years, with the assistance of the urethro-vesical forceps. Nos. 1, 2, 3, 4, 5, 6, 7, were brought into the urethra and removed by an opening anterior to the scrotum; each of them weighs about half a drachm. Nos. 8 and 9 were brought into the membranous part of the urethra, and removed

by cutting upon the gripe; the larger weighed one drachm twenty-four grains, and measured an inch in length, $\frac{13}{16}$ of an inch in breadth, $2\frac{1}{2}$ inches in its larger, and $2\frac{1}{8}$ inches in its smaller, circumference.

PLATE II.

Fig. 1. The calculus which occupied the prostatic urethra and neck of the bladder represented (plate ix, fig. 1;) it weighed ℥j ℈vss, and a section of it is here shewn, the upper portion of it having been submitted to the flame of a spirit lamp, by which a part has become fused; in this state it is preserved under a glass shade, forming a permanent exhibition and demonstration of the fusible calculus. There is a small nucleus of lithic acid, which was probably formed originally in the kidney or bladder, and not in the urethra. A large accretion has taken place around the nucleus, composed partly of lithic acid, but mixed with much animal matter; the outer white layer is fusible. Fused globules are seen at the upper part (a,) effected by heat of a spirit-lamp; and one large globule (b) is placed separately. The black appearance is from the animal matter, charred by the flame of the spirit-lamp.

Fig. 2. A calculus of singular shape, removed by lithotomy from a boy aged six years, and weighing ℥jv, ℨj. The entire calculus is represented (c, d;) the regular oblong portion (c) was lodged in the bladder, the irregular projection (d) extended into the prostatic urethra, the narrowing at (e) answering to the neck of the bladder; all the portion (d) is composed of phosphate of lime, and the outer layer of the portion (c) is of the same composition, formed upon a nucleus of oxalate of lime;—(f) represents the urethral portion, broken off, which happened in the operation, the two parts being removed separately; the letter is next to the broken rough surface.

Fig. 3 shews the stone extracted from the bladder represented in plate xxi, fig. 4, it weighed about an ounce and half; the greater part is lithic acid, but the outer dark covering and the rough projections are oxalate of lime.

Fig 4. A representation of six out of thirty calculi, which were removed by lithotomy; they present flat sides, and are generally of an angular shape, resembling the most common form of biliary concretions; their composition is triple phosphate, with a slight trace of lithic acid.

Fig. 5. Twelve calculi are represented, found on dissection in the bladder (plate xviii, fig. 1) of a very aged man; there were altogether seventy-five calculi in the bladder, most of them hexagonal, and composed of nearly pure lithic acid.

Fig. 6. Concretions of phosphate of lime arising from the coat of enlarged veins, about the prostate gland and neck of the bladder, in aged men—(g) portion of an enlarged vein, situated near the prostate gland in an octogenarian; immediately before dividing into three branches (1, 2, 3,) it is greatly enlarged, and filled by an oblong concretion, which is exposed at (h) by a portion of the coats of the vein being removed—(i) is a smaller concretion of the same kind, the rough prominent surface (k) being the part by which it adhered to, and grew from, the coat of the vein—(l) is a much larger concretion of the same kind, its point of adhesion marked by a rough prominence—(m) is a section of one of these bodies, the cut surface presented to view—(n) and (o) are smaller concretions, the former very like a small white pea; the rough prominence by which it adhered is distinct.

Fig. 7. Two calculi found after death, in the bladder of a man aged eighty years, who had undergone lithotrity about three months before, when one small stone was broken up. The larger of these two calculi weighs ʒvj, the smaller ʒj, xv grs; the bladder in which they were contained, forms the object of plate xix, fig. 2.

Fig. 8 gives a correct view of twenty-two calculi, found in the bladder of a septuagenarian patient, whose death they occasioned; they weighed altogether above three ounces and a half, and their composition is lithic acid with a small proportion of oxalate of lime. The calculus (p, q,) was entire when removed from the bladder, weighing seven drachms and a half, but it fractured into two portions in being conveyed from the patient's house. The remaining twenty-one calculi (r, s, t,) are evidently multiplied from three regular calculi, of the same shape as (p, q,) having been fractured in the bladder, by knocking against each other, under the movements of the patient, or by the use of the sound. The four portions marked (r) form

one calculus; but the fracture into these four parts must have taken place some time before death, to allow of the deposit upon the fractured surfaces, all of which, in this and the subsequent divisions, contrast with the recent fracture (p, q.) Eight portions form the third stone (s,) in which the fractured surfaces are less obscured by fresh deposit; and the nine remaining fragments (t,) forming one stone, must have been more recently broken to pieces than the rest, if we may judge from the sharpness of the angles, and distinctness of the fractured surfaces, presented by most of them.

PLATE III.

Fig. 1. A healthy kidney, minutely injected with size and vermilion, of which a central section has been made and one half removed, forms the subject of this figure, introduced here in order to contrast the normal size and form of the substance and cavities of this organ, with the diseased conditions represented in several following sketches:—(a, a,) rest upon small portions of the outer surface of the kidney—(b, b, b,) are placed upon the cut surface, in the situation of the cortical part, and (c, c, c, c, c, c,) upon the mammary or tubular part, of the parenchymatous structure—(d) the pelvic cavity laid open—(e) one of the infundibula laid open, and continuous with the pelvic cavity by a broad space—(f) another of the infundibula laid open, having a narrow communication with the pelvic cavity—(g) a third infundibulum opened, communicating with the pelvic cavity by a narrow channel, through which a bristle is passed—(h) the ureter of natural size—(i) the emulgent vessels—(k, k, k, k,) adipose substance exposed in the section of the kidney.

Fig. 2. The left kidney of a gentleman, who died from enlarged prostate gland and vesical calculi, when he had attained above the age of seventy years; it has been minutely injected, and opened by a longitudinal section on its convex edge, extending into the pelvic cavity; the divided surfaces of the kidney being separated,

a calculus is exposed in one of the infundibula—(a, a,) the outer surface of the kidney—(b, b, b, b,) the parenchymatous substance divided, and the cut surfaces separated from each other—(c, c,) an hydatidous cyst divided, the albuminous substance filling it, in the preparation, being coagulated by spirit—(d) a smaller cyst opened, situated on the outer surface of the kidney—(e) a calculus lodged in an infundibulum, near the upper extremity of the kidney, and coming into contact with the cortical substance, the tubular part being absorbed—(f) the pelvic cavity laid open, which, as well as the ureter (g,) is much enlarged.

Fig. 3. A section of a minutely injected kidney, found in a lady of advanced years, who died of rupture of the heart, and who gave no other sign of suffering from disease in the kidney, than by complaining of lumbago, although a large calculus occupied the pelvic cavity—(a) is placed upon a small part of the outer surface of the kidney—(b, b, b,) the divided surface of the parenchyma—(c, c,) a quantity of adipose substance—(d, d,) interspaces between the infundibula, occupied by adipose substance, which has been removed—(e) a spurious hydatid in the cortical substance, cut open—(f) outer surface of the pelvis of the kidney—(g, g, g,) one of the infundibula, expanded into a large irregular cavity, by absorption of the corresponding mammary process and tubular part, in consequence of a large calculus (h, h, h,) lodging in the pelvic cavity, and extending into the infundibula —(i) one of the infundibula, laid open at its termination, with a bristle inserted, to shew its continuation into the pelvic cavity—(j) an inferior infundibulum laid open, much enlarged and irregular, reaching to the cortical part at one extremity, and at the other receiving part of the calculus (h)—(k) an infundibulum reaching near to the outer surface of the kidney, and its narrow communication with the pelvic cavity shewn by a probe—(l, l,) the ureter laid open—(m) a small calculus infixed in the ureter near its setting off from the pelvis—(n) portion of the ureter unopened and a little enlarged where it is cut across.—*(In the Museum of the College of Surgeons.)*[1]

[1] The preparations from which this and several following drawings were taken, having been lately presented by me to the Royal College of Surgeons in London, I have designated each as being preserved in the valuable and unrivalled museum of that body.

Fig. 4. The left kidney of a gentleman, aged sixty years, who died from inflammation, abscess, and gangrene, caused by a calculus in the ureter—(a, a, a,) the parenchymatous substance, exposed by a longitudinal section, the other half of the kidney being removed—(b, b,) adipose substance—(c) the situation of an abscess, the walls of which were gangrenous—(d, d,) enlarged infundibula, (e) the pelvic cavity, (f) the ureter, all laid open—(g) the calculus.

PLATE IV.

Fig. 1. The left kidney of a man aged forty six years, who died from the effects of renal calculi. Its parenchyma or glandular part is greatly increased, the whole organ when removed weighing 12 ounces—(a, a, a, a,) rest upon the outer surface of the kidney, a considerable portion of which is removed by a longitudinal section, exposing the parenchyma (b, b, b, b,) of great thickness—(c, c, c, c,) are placed upon adipose substance—(d, d,) the pelvis—(e,) the ureter, which is cut across at (f,) to shew the size of its tube and thickness of its coats—(g, g, g,) are placed upon a large calculus, exposed at these three places by the membrane of the pelvis and infundibula being cut away; the calculus fills the pelvis, and extends into the infundibula (h, h, h,) which are enlarged into irregular cavities.

Fig. 2. The right kidney from the same patient as the preceding, with a calculus completely obstructing the ureter, and causing absorption of all the parenchymatous structure, so that the lining of the pelvis and infundibula was expanded till it came in contact with the external membranous covering of the kidney, forming a bladder which, after being emptied of its fluid, was inflated and dried, furnishing the preparation from which this plate is taken—(a) is the small calculus filling the ureter, near the pelvic cavity—(b) is the small and contracted ureter, below the calculus—(c) rests on the outer surface of the pelvis—(d, d, d, d,) the outer surface of the inflated capsule, rising into several prominences—(e, e,) the

enlarged cavities of pelvis and infundibula laid open, by cutting away a considerable portion of the dried capsule, thus bringing into view several septa between the cavities.

PLATE V.

THIS represents the left kidney, minutely injected, taken from a lady aged above sixty years, who died from a cancer in the breast; numerous small calculi were in the pelvis and infundibula; small calculi also obstructed the ureter, giving rise to great enlargement of those cavities and absorption of the parenchyma. The walls of all these cavities are so thin, that when the preparation is taken out of the spirit, it collapses, but, having been hardened in the preparing, it now beautifully displays the shape and size of the infundibula and pelvis, (which were so expanded as to hold six or eight ounces of fluid,) enabling the pathologist to study leisurely every part, till he fully understands it, proving the great value of the art of making such a specimen. The lining membrane of all the extensive urinary cavities of this kidney exhibits great vascularity—(a, a,) rest upon the outer surface of the lower extremity of the kidney, where it is still covered with its membranous capsule—(b) is a portion of the membranous capsule hanging down, having been detached from the outer surface of the kidney (c, c,)—a longitudinal section through the convex edge of the kidney has exposed the parenchyma (d, d,) and a portion being removed, we see the cut surface of the parenchyma (e, e,) also the enlarged infundibular cavities (f, f, f, f,) brought near to the outer surface of the organ, leaving the parenchyma in some parts not above one twelfth of an inch thick; septa are seen dividing these infundibular cavities—(g, g,) are placed upon the outer surface of the enlarged pelvis, the walls of which being partly removed, brings a view of the interior of the cavity (h)—at (i) the narrowest part of one of the enlarged infundibula is seen, in beautiful outline, joining the upper part of the pelvis—(j) the ureter of small size—(k) small calculi obstructing it. *(In the Museum of the College of Surgeons.)*

PLATE VI.

Left kidney of a man, aged fifty years, who died from the effects of a calculus lodged in the ureter. The kidney is of large size, as usually happens where this organ is affected with calculous concretions, from the irritation and increased vascularity kept up by their presence; after minutely injecting the organ with size and vermilion, I have exposed its structure by a longitudinal section, passing from its external convex margin, through the parenchymatous substance, so as to open the pelvic cavity; the two portions of the kidney being separated, expose very happily the following parts—(a) the ureter below the calculus, a little enlarged—(b) the ureter above the calculus, laid open so as to expose its enlarged cavity—(c) a calculus impacted in the ureter, two inches from its commencement—(d, d, d, d,) the lining membrane of the pelvis and infundibula, exposed by the opening of these cavities; it is very vascular and thickened from inflammation, and is minutely injected—(e, e, e, e, e, e,) the corresponding surfaces of the divided parenchymatous substance—(f, f,) the outer surface of the kidney covered by its membranous capsule.

PLATE VII.

Fig. 1. The left kidney of a young woman of very small size, and its parenchymatous substance chiefly absorbed, in consequence of a calculus impacted in the ureter, seven or eight inches below its commencement. The kidney is minutely injected, and its anterior half removed by a longitudinal section—(a, a, a, a,) the cut surface of the parenchyma, in some parts not the twelfth of an inch thick, or even entirely absorbed; the mammary processes are obliterated, and instead of projecting into, become concave on their surface next, the infundibula, as at (b, b, b, b, b,) the angular projections (c, c, c, c,) not answering to the mammary

processes, but to the points between them where the infundibula, from their structure, would not so readily expand—(d, d, d,) the enlarged and very irregular cavity of the pelvis and infundibula, in some parts reaching within a line of the outer surface of the kidney, the parenchyma being nearly all removed—(e, e,) the first inch of the ureter laid open, of large size, narrower at the point where the upper (e) is placed, marking the limit of the pelvic cavity, and suddenly contracting, so as to present a passage not large enough to receive a common probe at (f,) where the ureter is cut across.

Fig. 2 represents about seven inches of the left ureter, continuous with the portion of ureter (f) of the preceding figure. The first inch is turned forwards, to present the cut surface (g,) made by a transverse section; the letter points to the very small cavity of the ureter, of which the bulk is made up by the thickened coats, chiefly by the inner, and partly by the outer coat—(h, h,) the ureter unopened above the calculus (i)—(k) the ureter below the calculus. The anterior half of the ureter is removed to a small extent (l, l,) shewing the thickness of its coats, and narrowness of its cavity.

Fig. 3 is the right kidney of the same female, enlarged to more than twice its natural size, but in every other respect healthy—(a, a, a,) the outer surface of the kidney, enveloped by its membranous covering—(b) the emulgent artery and vein —(c) the ureter.

PLATE VIII.

Fig. 1. The left kidney and ureter of an elderly man; the kidney has been minutely injected, and one half removed by a longitudinal section—(a, a, a, a,) the divided surface of the parenchyma, the mammary processes obliterated—(b, b, b,) the pelvic and infundibular cavities, greatly enlarged and altered in shape; the lining membrane of these cavities is thickened, and very vascular—(c) the commencement of the ureter laid open, its cavity large—(d, d,) continuation of the ureter unopened, and equally enlarged for several inches—(e) a large calculus,

fixed in the ureter seven inches distant from the pelvic cavity, having caused the above obvious changes in the kidney and ureter, by impeding or entirely preventing the passage of urine into the bladder—(f) the enlarged ureter, laid open immediately above the calculus—(g) the ureter unopened below the calculus, much contracted.

Fig. 2. The bladder and left kidney are here represented, the latter opened by a longitudinal incision on its convex edge, to explain the absorption of the parenchyma, and the enlargement of pelvic and infundibular cavities, in consequence of a calculus situated in, and obstructing the ureter, within less than an inch of its terminating in the bladder—(a, a, a, a,) the external surface of the kidney—(b, b, b, b, b, b, b,) the corresponding cut surfaces of the parenchyma, at some parts not a twelfth of an inch in thickness, at others entirely absorbed; the mammary processes have given way to the expanding infundibula, the septa and prominent points of the parenchyma not corresponding to them, but to the parts where the lining of the infundibula was reflected, and where the greatest resistance was afforded, the mammary and tubular parts of the organ being the first to yield under the pressure which enlarges the infundibula—(c, c, c, c, c, c, c, c,) the infundibular and pelvic cavities, the former so extended as to come in contact with the outer membranous covering of the kidney at the upper part of the figure, and within a line of it in several other situations—the narrower openings by which the expanded infundibula communicate with the pelvic cavity are seen in several places—the membrane lining these extensive cavities was morbid, very vascular, and secreted abundantly an opaque mucus—(d, d,) the enlarged ureter, which is drawn only half of its entire length, to bring the figure within the limit of the paper; it is laid open at (e) to expose the calculus—(f, f,) the outer surface of the bladder—(g, g,) its cavity laid open by removal of its anterior portion—(h) the prostate gland—(i) a bougie passed through the prostatic part of the urethra, and appearing in the cavity of the bladder.—*(In the Museum of the College of Surgeons.)*

Fig. 3 represents a kidney almost absorbed, being a small bag, little more than an inch in length, owing to ossification of the emulgent artery—the superior letter

(a) rests on the body of the kidney—(b) on the pelvis—(c) marks the very small ureter—the inferior letter (a) marks the emulgent artery, very much ossified, dividing into three branches (e, f, g,) before entering the kidney; each of these branches is likewise much ossified—(h) the emulgent vein, joining (i) the ascending vena cava. As the cavities of the kidney and ureter were quite unobstructed and no other disease present, I see no reason why the atrophy of this organ should not be attributed to the extreme ossification of the emulgent artery.

PLATE IX.

Fig. 1. A left lateral view of the bladder, root of penis and appendages, removed from a patient aged sixty-eight years, who died from the effects of a calculus, situated in the prostatic and membranous parts of the urethra, and extending into the neck of the bladder—(a) the root of the penis—(b) the corpora cavernosa cut across—(c) the urethra covered by its corpus spongiosum and dense membrane—(d) the bulb of the urethra—(e) Cowper's gland large and distinct—(f) the left crus penis cut across—(g, g,) the fundus of the bladder covered by peritonæum—(h, h, h,) parts of the bladder, the peritonæum removed—(i) the left vesicula seminalis—(j) the termination of left ureter—(k, k,) the cavity in which the calculus, represented in fig. 1 of plate ii, was lodged, being just large enough to contain it, and formed by a small portion of the membranous part of the urethra, by all the prostatic part, and by the neck of the bladder as far as where the ureters open into it—a bougie (l) is passed though the spongy and membranous parts of the urethra, and appears in the cavity at (m)—another bougie (n) is passed through the termination of the left ureter, and appears in the cavity at (o,) marking the superior limit of the cavity to be level with the orifice of the ureter—two bristles (t) mark the orifices of the vasa deferentia, thereby defining the exact situation of the prostatic part of the urethra, the prostate gland itself being entirely absorbed, or no other trace of it left than the dense firm substance (s,) like condensed cellular

membrane. There being constant stillicidium, the part of the bladder above the termination of the ureters had become useless as a reservoir, and is contracted into a substance little bigger than a marble, the thickened coats cut through being marked in a lateral view by the letter (p,) and the cavity laid open answering to (q,) in which rests the blunt end of a common probe, introduced at (r,) from the cavity in which the calculus lodged. The exact situation of the calculus becomes clearly demonstrated by these different references, and the changes its presence effected, particularly in contracting all the upper part of the cavity of the bladder, are not less evident.—*(In the Museum of the College of Surgeons.)*

Fig. 2. The bladder of Dr. ——, aged nearly eighty years, the prostate gland surprisingly enlarged, giving rise to the formation of four calculi, which entirely filled the bladder at death, and were so tightly embraced by its coats, as to leave an impression on the inner surface, answering to each calculus; these impressions still remain in the preparation in my collection, and are expressed in the drawing —(a) the membranous part of the urethra laid open—(b, b,) outer view of the prostate gland, immensely enlarged, so as to equal in outline the size of the bladder—(c, c,) cut surfaces of the anterior part of the prostate gland; these are of unusual thickness, and are a little separated from each other, to expose (d, d,) the prostatic part of urethra, which is very irregular and elongated by the growth of the gland—(e) the central lobe of the prostate gland, projecting into the bladder—(f, f,) the ureters—(g, g, g, g,) the outer surface of the bladder, the anterior part of which being removed, the thickness of the coats (h, h,) is delineated, and the cavity of the bladder (i) laid open, wherein the impressions of the four contained calculi are made distinctly visible. The four calculi together weighed ʒiij x gr., and the smallest of them is represented in fig. 5 of the first plate.

Fig. 3. The urinary organs of a boy, about four years old, in whom an oblong calculus, not bigger than a pea, lodged at the anterior termination of the urethra, and being overlooked, caused bursting of the urethra and all the changes of form here represented—(a) a bougie introduced into the urethra—(b) the spot behind the glans, answering to the situation which the small calculus occupied—(c, c,) openings in the urethra, caused by its sloughing under the pressure of retained urine,

opposite to the anterior part of the scrotum—(d, d,) a cavity formed by sloughing, from effused urine—(e) the divided surface of left os pubis, near its junction with the os ilium—(f, f, f,) the outer surface of the bladder—(g, g,) its divided coats, the anterior part of the bladder being cut away—(h) the cavity of the bladder, of very large size—(i, i, i, i,) the ureters, enlarged and elongated, the left more so than the right—(j, j,) the pelvis of each kidney, the left more enlarged than the right. The kidneys (k, k,) are not in their normal position, their convex or outer edges being turned towards each other, to give a better view of the ureters and pelves.—*(In the Museum of the College of Surgeons.)*

PLATE X.

Fig. 1. A complete view of the urinary organs of a patient, who died at the age of thirty-six years, and in whom a stricture in the membranous part of the urethra proved the cause of all the diseased appearances here represented. The corpora cavernosa penis are divided, in the situation of the septum, through their whole extent, exposing the cavity of the urethra, from its external orifice to the commencement of the membranous part; an ulcerated cavity is seen at the bulb, situated just anterior to the stricture, and probably made by the bougie. The crura penis are cut across at (a, a,)—at the membranous part (b) a bristle is passed through the stricture, which was only just large enough to admit it. Fistulous openings communicate with the urethra behind the stricture, extending to the perinæum, where they have an external outlet. A calculus (c) lodges in the membranous, and in a small part of the prostatic urethra, behind the stricture. The lateral lobes of the prostate gland (d, d,) are large. The verumontanum (e) marks the prostatic urethra, which is greatly extended, so as in a degree to obliterate the usual trace of the neck of the bladder, rendering this and the prostatic urethra one continuous cavity; the anterior part of the bladder being removed shews the thickness of its coats, and exposes its very capacious cavity, and also its

lining membrane, which is very morbid, being covered with adhering lymph in many parts, and presenting numerous folds and cavities, chiefly above the terminations of the ureters. At the fundus of the bladder, where covered by peritonæum, there was a large abscess in its coats (f,) which is laid open in the preparation. The right ureter (g) is distended, so as to resemble one of the intestines; and at (h, h,) part of its walls are removed, exposing its cavity. The right kidney (i) is turned half round, and so far changed from its normal position, in order to give a more advantageous view of its enlarged cavities, which are exposed by the removal of a part of its convex edge by a longitudinal incision; thus are seen the cut surfaces of the parenchyma, which is principally absorbed, leaving only narrow septa between the very enlarged infundibular cavities, several of which cavities contract, each into a narrow isthmus, in their way to join the general cavity of the pelvis. The left ureter (k, k,) is moderately dilated; a small part of the convex outer surface of the corresponding kidney is marked (l,) and the posterior half of this organ has been removed by a longitudinal section, and the cut surface of the remaining half turned forwards, shewing the enlarged cavities of the pelvis, the irregular infundibula, and the shape and thickness of the parenchymatous substance.—*(In the Museum of the College of Surgeons.)*

Fig. 2 and 3 are two calculi, found in the cavity of the bladder of the preceding figure, lodged in folds of its internal coat.

PLATE XI.

Fig. 1. The bladder and prostate gland represented, to shew small calculi situated deeply in the ducts of the latter—(a, a,) rest on the outer surface of the bladder—(b, b, b,) the coats of the bladder cut through in removing its anterior part, and of considerable thickness, owing principally to the muscular coat, the inner or membranous coat being thin and shewn by a separate line—(c) the cavity of the bladder, the lining membrane falling into numerous folds—(d, d,) the outer sur-

face of the lateral lobes of prostate gland—(e, e,) cut surface of each lateral lobe of the same, made in the removal of the anterior part of the gland—(f, f,) the prostatic portion of the urethra laid open, in which is seen (g) the verumontanum —(h) bristles passed into two ducts of the gland; the superior bristle is seen in the duct exposed on the cut surface of the left lobe, and at (i) the bottom of the duct a small brown calculus lodges—two other small calculi are likewise seen (j,) to one of which the inferior bristle leads—(k) ducts of the right lobe exposed upon the cut surface.

Fig. 2. The ducts of the prostate gland occupied by numerous calculi, some of great size. The bladder presents a very capacious cavity, with numerous sacculi observable in its inferior half, consequences of the dysury caused by the prostatic calculi—(a, a,) the outer surface of the bladder—(b, b,) coats of the bladder cut through in removing its anterior part—(c, c,) the cavity of the bladder—(d, e, f,) mark the situation of small sacculi of the inner membrane—(g, h,) are the entrances to two very large sacs or herniæ of the inner membrane through the muscular coat, both of which offer prominences (j, k,) upon the external surface of the bladder—the entrance (g) to the large sac (j) is wide enough to receive the finger, though narrow in reference to the cavity to which it leads—(l) marks the prominence of a large sac on the outer surface of the bladder, the broad entrance to which is seen at (i)—(m) is the left vesicula seminalis—(n, n,) the outer surface of each lateral lobe of the prostate gland—(q, q,) cut surfaces of each lobe, made in removal of the anterior part of the gland—(p) prostatic portion of urethra, upon which the orifices of several ducts are seen, each occupied by a calculus, one or two of which project into the urethra—the ducts of the left lobe are occupied by numerous calculi, exposed by cutting the gland away in different directions—(r) points to four calculi exposed in the ducts half an inch from their orifice—(s) shews three larger calculi—(t) is a large calculus, exposed in the right lobe, by removal of a part of the cyst in which it is contained.

Fig. 3. The bladder and its appendages, removed from a patient aged eighty-one years, shewing the prostate gland converted into large cysts or bags, containing numerous calculi—(a, a,) the corpora cavernosa penis, divided in the situation of

the septum—(b) the left crus penis cut through—(c) spongy part of urethra, into which a probe is passed, going through a portion of the urethra that is unopened, and at (d) appearing in the prostatic part of the urethra, which is laid open—(e) a fistulous sinus, communicating with the urethra, posterior to the stricture, which is situated in the membranous part just behind the bulb—(f, f,) the outer surface of the two lateral lobes of the prostate gland—(g,) a large bag or cyst of the prostate opened; it was filled with numerous small brown calculi, several of which remain and are visible—although such cysts when large may not be found communicating with the urethra through ducts of the prostate gland, yet, seeing the situation of the calculi in the ducts, at an earlier stage, their similarity of form and colour, and identity of composition, the inference seems unavoidable that in each case the concretion begins to form in the prostatic excretory ducts. The remaining references to this plate are—(h, h,) the vesiculæ seminales—(k, k,) the ureters—(l, l,) the fundus of the bladder covered with peritonæum—(m, m, m, m,) the very thickened coats of the bladder, divided in the removal of its anterior part—(n, n,) the contracted cavity of the bladder, very morbid, and covered with adherent lymph—(o) the trigone of the bladder—(p, p,) prominences of the lateral lobes in prostatic part of the urethra.

PLATE XII.

Fig. 1. Bladder of a gentleman, aged above 60 years, who died from inflammation of that organ arising from gravel and small calculi, and producing stricture and retention of urine; in attempts to relieve the urgent symptoms, a false passage was made with the catheter—(a) the urethra laid open—(b, b,) external view of the lateral lobes of the prostate gland—(c, c,) the cut surfaces of the anterior part of the gland, the opened urethra intervening—(d, d,) the track of a false passage, made through the anterior part of the prostate gland—(e, e, e,) the outer surface of the bladder—(f, f,) its coats, divided in the removal of its anterior part, in order to expose its cavity (g, g,) which is marked by the effects of inflammation, and by numerous sacculi, many of which contained small lithic acid calculi.

Fig. 2. The bladder and its appendages, from a patient in whom stricture of long standing was followed by a vesical concretion, which has already been represented (plate i, fig. 2.) Under retention of urine, the catheter was employed by a surgeon and passed through the posterior part of the prostate gland, entering the bladder behind the trigone—(a) the urethra laid open, by an incision through corpora cavernosa and corpus spongiosum—(b) the stricture at the membranous part—(c) a sinus, communicating with a perinæal fistula—(d, d,) the outer surface of the lateral lobes of prostate gland—(e, e,) the lobes divided anteriorly, and separated to expose the prostatic part of the urethra, in which a piece of bougie (f) is lodged, which marks the course of a false passage, its end appearing at (g,) after passing behind the trigone (k,) thus reaching the cavity (i, i,) of the bladder—(h) is placed on the outer surface of the bladder, the anterior half of which has been removed.

PLATE XIII.

This bladder is from an aged gentleman, whom I had often been called to, under retention of urine, and successfully relieved with the catheter; but a surgeon, when I was absent, found difficulty, and reached the bladder by perforating the prostate gland; this happened two or three weeks before death. There was no urinary calculus in this case, and the plate is here introduced to shew a third direction in which the prostate gland may be injured, besides what is explained in the preceding plate. The crura penis are separated at (a, a,) exposing the urethral cavity (b) at the bulb—(c, c,) the lateral lobes of an immensely enlarged prostate gland—(d) membranous part of the urethra laid open—(e, e,) anterior part of prostate, divided in the median line, and the cut surfaces separated, to shew the urethra continued through it—(f) the surface of the middle prostatic lobe, forming the posterior part of the urethra—(g, g,) the outer surface of the bladder—(h, h, h,) the coats of the bladder, divided in the removal of its anterior part, and of great

thickness—(i, i,) the cavity of the bladder—(j, k,) the ends of a short bougie, which is passed through the prostate gland, shewing the perforation made by the catheter.—*(In the Museum of the College of Surgeons.)*

PLATE XIV.

FIG. 1. The bladder of Mr. K——, who died from enlarged prostate gland, with urethral stricture, and a large vesical calculus—(a, a,) the corpora cavernosa penis divided, exposing the urethra (b)—at (c) the commencement of the membranous part, the stricture is situated, behind which (d) the passage is enlarged—(e) a bougie, introduced through the unopened prostatic part of urethra, and appearing at (f) in the bladder—(g) the enlarged prostate gland, seen at (h) projecting into the bladder—(i) the lower end of the left ureter, much enlarged, and through it a small bougie (j) is passed, which appears at (k) to mark the narrow orifice of the ureter at its very termination—(l) the right ureter, its coats of immense thickness, and cavity small—(m) the outer surface of fundus of bladder, covered by peritonæum—(n) parts of its outer surface, where there is no peritonæal covering—(o, o, o,) the immensely thickened and dense coats of the bladder, exposed by removal of a part of the organ, by which its cavity (p) is laid open, which was filled with a globular calculus—(q) the termination of right ureter in the bladder marked by a piece of bougie introduced into it. The calculus which occupied the bladder of this patient is represented in plate i, fig. 6.

FIG. 2. One of the kidneys of the patient referred to in the preceding description; it has been minutely injected, and half of it removed by a longitudinal section, to shew the morbid effects of stricture, enlarged prostate gland and stone in the bladder—(a, a, a,) thick covering of adipose substance—(b, b, b,) the divided surface of the parenchyma—(c, c,) gangrenous portions of it—(d) the pelvic cavity, enlarged, and its lining membrane very vascular and much thickened—(e)

the ureter, very large, and opened at (f,) to shew the size of its cavity and thickness of coats—(g) a small bougie passed into the commencement of the ureter, and appearing at (h,) to mark the turn the passage takes here, and the narrowness of the orifice by which it communicates with the pelvic cavity.

PLATE XV.

Fig. 1. The bladder and enlarged prostate gland of a patient, who died at the age of sixty-three years, the disease under which he long suffered, inducing inflammatory stricture of the urethra, and at length a stone in the bladder, which, when removed *post mortem*, weighed about five drachms—(a) the penis, opened on the anterior part, to expose the urethra—(b, b,) the outer surface of the very enlarged prostate gland, which is seen projecting into the cavity of the bladder, not by a prominent central lobe, but by a general enlargement of the lobes—(c, c,) the external surface of the bladder; the divided coats, exposed in removal of the anterior part of the organ, are thickened, especially at the fundus (d,) where suppuration took place preceding death, the matter escaping into the peritonæal cavity.

Fig. 2 represents one of the kidneys from the same patient as the preceding, minutely injected, and one half removed—(a, a, a,) the cut surface of the parenchyma, highly tinged with the injection, except at the mammary portions—(b, b,) the outer surface of the enlarged pelvis—(c, c, c,) the pelvic cavity, laid open by removal of its anterior walls; it is of great size, and of an irregular shape, the infundibula being made one cavity with it; the lining membrane very vascular, thickened and marked with spots of extravasated blood, effectively represented in the drawing—(d, d,) the enlarged ureter, opened to shew its cavity and thickness of its coats—a small bougie (e) is passed from the ureter into the pelvic cavity, appearing at (f,) and marking the turn of the ureter at its commencement, and the narrowness of its orifice.—*(In the Museum of the College of Surgeons.)*

PLATE XVI.

Fig. 1. Bladder of a middle-aged man, shewing the fatal effects of stricture and stone—(a, a,) corpora cavernosa penis divided—(b, b,) sinuses in the left corpus cavernosum, communicating with a perinæal fistula—(c) spongy portion of the urethra, laid open by the division of the corpora cavernosa—(d) a stricture immediately behind the bulb—(e, e,) membranous bands, forming a firm net-work across the dilated portion of urethra, behind the stricture—(f, f, f,) refer to several openings in this net-work, behind one of which a lithic-acid calculus is lodged, which is visible at the opening (g)—the prostatic portion of urethra is marked (h,) and (i, i, i, i,) are pieces of quill, holding out the opened urethra and stretching the net work—(k, k, k, k,) the outer surface of the bladder—(l, l,) the coats of the bladder, from half to three quarters of an inch thick, cut through in the removal of the anterior part of the organ, to shew its oblong narrow cavity (m, m,) corresponding very accurately to the singular calculus, represented in plate i, fig. 10, and which was lodged in it. The lining membrane of the bladder is almost disorganized, being loose, flocculent, and covered in some places with adherent lymph. There were extensive perinæal fistulæ, the communication of which with the membranous part of the urethra, immediately behind the stricture (d,) is concealed by the net-work of finely organized substance extending across that part of the passage.

Fig. 2. The bladder of an aged man, with a large steatomatous tumour, situated at the neck of the bladder and behind the prostate gland. The smooth egg-like calculus, represented in fig. 7, plate i, was contained in this bladder—(a) prostate gland—(b) a bougie, passed through the prostatic urethra, and appearing in the bladder at (c)—(d, d, d,) the divided coats of bladder, one half being removed—(e) the spacious cavity of the bladder—(f) the left ureter, into which a small bougie (g) is passed, which appears in the bladder at (h)—(i, i,) the large steatomatous tumour, situated between the bladder and rectum, and projecting into the cavity of

the former at (j, j, j,) so as to prevent the calculus from falling upon the neck of the bladder, its resting place being behind those prominences, in the space below the dotted line (k, k.)

PLATE XVII.

The bladder and its appendages, shewing the extreme and fatal effects of stricture and stone, perinæal fistulæ, abscesses in the coats of the bladder, and adhesion of the contiguous bowel—(a, a,) the corpora cavernosa and corpus spongiosum divided, exposing the whole course (b, b,) of the spongy portion of the urethra—(c) a stricture at the commencement of the membranous part—(d) the orifice of a sinus behind the stricture, which communicated with extensive sinuses, opening upon the perinæum—(e) the prostatic portion of urethra—(f, f,) the outer and superior surface of bladder, where covered by peritonæum—(g, g,) the outer surface of the same, where there is no peritonæal covering—(h, h, h,) the divided coats of the bladder, from half an inch to an inch in thickness, shewn by the removal of its anterior part—(i, i,) large cavities formed by abscesses in the coats of the bladder, the matter, by a circuitous course, getting an outlet by reaching the cavity of the bladder by the opening (k)—(j, j, j,) the cavity of the bladder, of very small size —(l, l,) a portion of the colon, adhering to the fundus of the bladder—(m) the cavity of a large abscess in the coats of the bladder, threatening to burst into the colon.

PLATE XVIII.

Fig. 1. The bladder of a patient, whom I successfully lithotomized when seventy-five years old, removing six calculi of pure lithic acid, weighing nearly four ounces; he died eleven years afterwards, when numerous small calculi were found in the bladder, twelve of which are represented in fig. 5 of plate ii. The vesical cavity

is spacious, the coats of the organ are much thickened, and the prostate gland is much enlarged—(a, a,) the cut surfaces of the prostate gland, separated from each other to shew the prostatic urethra (b,) and the prominences (c, c,) of the gland towards the cavity of the bladder—(d, d,) external surface of the lateral lobes of prostate gland—(e, e,) the outer surface of the bladder—(f, f,) its coats divided, in the removal of a portion of the organ to expose the spacious cavity (g, g,) which is marked by the openings of numerous sacculi at the inferior part, and by four large sacs (h, h, h, h,) at the fundus.

Fig. 2. A gentleman, who had suffered from stricture of the urethra, of which he got entirely cured, continued to have frequent painful micturition and a morbid state of the lining membrane of the bladder, causing death after several years of severe suffering. His bladder, represented in this figure, exhibits large hernial sacs of the inner membrane, which were the cause of his suffering; and the formation of these is best explained by the dysury, which the strictures, when present, created —(a, a,) outer surfaces of the lateral lobes of prostate gland—(b, b,) cut surfaces of the anterior part of the same—(c, c,) prostatic part of the urethra—(d, d, d, d,) outer surface of the bladder—(f, f,) its cavity, in which (g, g, g, g,) and (h, h, h, h,) mark so many openings leading to the hernial sacs of the lining membrane, each hernia being complete and of considerable size—the orifice marked (i,) wide enough to receive the end of the finger, leads to the largest hernial sac (k, k,) the cavity of which is opened (l) to shew its size and the thinness of its walls.

PLATE XIX.

Fig. 1. The bladder of a gentleman, who suffered from a vascular tumour of its inner membrane, arising near the termination of the left ureter, and inducing symptoms like those of stone, which led to repeated injurious sounding—(a, a,) prostate gland—(b, b,) prostatic part of urethra, laid open—(c, c, c,) outer surface of the bladder—(d, d, d,) its divided coats, the anterior part of the organ being

removed—(e) its cavity—(f) the tumour, situated around the orifice of right ureter, and presenting in the preparation the woolly appearance so accurately depicted in the drawing—(g) right ureter, much enlarged; a small bougie passed into it, appears in the bladder at (h) after passing through the middle of the tumour. The left ureter (i) is of small size, a bougie (k) indicating the point where it terminates in the bladder.

Fig. 2. Bladder of an Octogenarian, on whom lithotrity was performed three months before death, and one small calculus broken down; two were found in the bladder on dissection, and are represented in fig. 7 of plate ii—(a) answers to the root of penis—(b) to bulb of urethra—(c) outer surface of left lobe, and (d) outer surface of right lobe, of prostate gland—(e, e, e,) external surface of the bladder—(f, f,) its coats, divided in the removal of its anterior part, to expose the vesical cavity (g,) marked by sacculi—(h, h,) cut surfaces of prostatic lobes—(i) is a tumour attached to the left prostatic lobe, and rising prominent into the cavity of the bladder—(j) is a similar tumour, of less extent, arising from the right lobe, and projecting into the bladder.

PLATE XX.

Fig. 1. This is an exhibition of the bladder of a patient who died from stone, after suffering severely for many years; it exhibits one of the consequences of that disease, the formation of numerous sacculi or herniæ of the lining membrane through openings in the muscular coat. The view offered is different from any others in this series, the cavity of the bladder being opened from behind, by removal of its posterior part, and the prostatic urethra being exposed by a posterior longitudinal section through the prostate gland, in the course of the median line, the incision passing between the vasa deferentia and through the verumontanum—(a, a,) the outer surface of lateral lobes of prostate, in a posterior aspect—(b, b,) the cut surfaces of the same gland, separated to expose the urethra (c)—(d, d, d, d,)

the coats of the bladder, cut through in a section, by which the posterior part of its walls were removed—(e, e,) vesiculæ seminales—(f, f,) vasa deferentia—(g, g, g, g,) the prominences of sacculi seen on the outer surface of bladder—(h) the cavity of the bladder, in which the openings of numerous sacculi (i, i, i, i, i, i, i, i, i,) are observed—(k) marks a sacculus, opened in the removal of the posterior part of the bladder, and extending not quite through the thickened muscular coat—(l) is a complete hernia of the inner membrane, expanded into a considerable bag, after escaping beyond the muscular coat; this sac is opened, and a bristle introduced, which, after passing through the neck of the sac answering to the thickness of the muscular coat, is seen in the bladder at (m) marking the narrow opening of communication between this cavity and the sac—(n) is the right ureter, immediately behind which the hernial sac (l) is situated—(o) is a much larger sac, situated behind the left ureter (p) and opened at (q) admitting a probe (r) which is seen in the bladder at (s) where this sac communicates with the cavity of the bladder by an opening large enough to receive the little finger—(t) is a smaller sac opened, and situated near the left ureter. The termination of the ureters in the bladder are pointed out by (u, u,) a small bougie being inserted into each of them.

Fig. 2. This and the two following figures are intended to give a clear notion of the disease in the lining membrane of the bladder, and the effects produced upon the kidneys, of Master C——, on whom cystotomy was performed when he was two years old. Fig. 2 represents the bladder, with the urethra (a, a,) laid open in its whole extent—(b, b,) the cut surfaces of the corpora cavernosa—(c, c,) crura penis—(d, d,) outer and lateral parts of the bladder—(e) its fundus, covered by peritonæum—(f, f,) the coats of the bladder, divided by a central anterior section, and separated to expose the cavity, at the upper part of which (g) the lining membrane is flabby, but not developed into distinct tumours, such as are evident on all the lower half of the cavity—(h) is a large polypous tumour, at termination of the left ureter, prominent and firm, with a broad basis, having been felt on sounding the patient—(i) is a similar tumour, of smaller size, and less prominent, situated at orifice of right ureter—(j, j,) numerous smaller and irregular tumours, occupying all the neck of the bladder, some long and pendulous enough to extend

into the urethra, the prostatic part of which was dilated to receive them—at (k, k,) near the fundus of bladder, its divided coats are much thickened, and a small cavity is opened which contained matter.—*(In the Museum of the College of Surgeons.)*

Fig. 3 shews some of the tumours, removed by the operation; they are contracted by the spirit, and appear less than when removed, but represent correctly such of them as I have preserved; many small portions were not kept.—*(In the Museum of the College of Surgeons.)*

Fig. 4. Both kidneys were alike, and a section of one of them, injected with size and vermilion, is shewn in this figure—(a) a small part of the outer surface of the organ seen—(b, b, b, b,) the parenchyma divided by a longitudinal section, removing one half of the organ—(c, c, c,) enlarged pelvis and infundibula—(d, d. d, d, d,) projections of the mammary processes into infundibula—(e) narrow opening, by which the ureter communicates with the pelvic cavity—(f) the ureter enlarged, and its coats thin; the extent of its cavity is shewn at (g,) where it is cut across.—*(In the Museum of the College of Surgeons.)*

PLATE XXI.

This and the six following plates contain drawings of the bladder and its appendages, removed from twelve male patients, who died after litho-cystotomy; they are collected from different sources, some of the cases having occurred in my own practice, others referring to operations which I witnessed; but all the specimens are in my collection, from which the drawings have been accurately made. The first three figures refer to juvenile patients; all the rest to adults.

Fig. 1. The parts concerned in an operation of litho-cystotomy, performed upon a boy four years of age, who fainted and died seven hours after the operation, from a gradual bleeding, in consequence of the bulb of the urethra being cut and the left artery entering the bulb divided. A part of the symphysis pubis is preserved, with the bladder and penis—(a, b,) are placed on this latter body—(c) the

symphysis pubis—(d) the body of os pubis, cut through on the left side of symphysis—(e, e,) anterior external surface of the bladder, behind and above the symphysis pubis—(f) posterior external surface of the bladder—(g) its cavity laid open by removal of a great portion of its left half—(h, i,) terminations of the ureters in the bladder, the left (h) by two orifices, answering to the double ureter (j, k,)——(l) the left prostatic lobe, which had been divided in the operation, by a proper incision downwards and outwards; but the incision had not gone through the gland, to the neck of the bladder, the latter not being cut, but suffering dilation, so as to permit the forceps to enter, and the stone to be extracted, without any laceration—(m, m,) integuments of the perinæum—(n) external view of the wound made in the operation, which is laid open (o, o,) and seen to be funnel-shaped, contracting at (p,) where it reaches the prostate gland. In the preparation, the parts are of course somewhat contracted from the effects of the alcohol in which they are preserved, making the depth of the neck of the bladder from the perinæal surface appear less than it really was; but, allowance being made for this, the drawing will give much correct and useful information, upon the form, direction, and depth of the wound. A bougie (q) is passed into the urethra, appearing in the wound at (r) and the letter (s) points to the spot, where the bulb was slightly wounded, and the left arterial branch entering the bulb divided.

Fig. 2. Urinary bladder and its appendages, from a lithotomized boy, aged four years, who died three weeks after the operation, in consequence of erratic erysipelas, which, commencing in the scrotum, spread extensively over the body. From the attack of erysipelas, the wound had failed to contract and heal; it therefore appears nearly as large as it was at the time of the operation—(a) the penis—(b) a bougie introduced through the urethra, its extremity appearing at (c) in the opened cavity of the bladder—(d) the left crus penis cut across—(e, e,) outer surface of the bladder—(f) its cavity—(g) its divided coats, shewing their thickness—(h) left ureter—(i) left lobe of prostate—(j, j,) portion of integuments of perinæum—(k) the perinæal wound—(l, l,) continuation of the wound towards the bladder—(m) a bougie introduced through the whole course of the wound, and appearing at (n) in the cavity of the bladder. The same remark applies in regard to the contracted

dimensions of this, as was made upon the preceding figure; still each of them will furnish a useful study to the lithotomist. *(See case 9 in Appendix,* No. 1.)

Fig. 3. This is taken from a boy, three years old, who was seized with convulsions, and after lying for three days comatose, died on the twenty-first day after the operation, from effusion upon the brain. Thirty-two lumbrici were found in the intestinal canal. The quantity of pus passing with the urine by the perinæal wound, and the pain experienced on voiding urine, indicated that urinous sinuses remained about the neck of the bladder; and such are observable in the preparation, but I do not attribute the fatal termination to their existence, except so far as the dysury they occasioned contributed, with the verminose state of the intestinal canal, in producing effusion within the cranium—(a) the penis—(b, b,) outer surface of the bladder—(c, c,) its coats, divided in removal of the anterior part—(d) prostate gland, divided anteriorly to expose the urethra—(f) cavity of the bladder —(g, g,) portion of perinæal integuments—(h, h,) adipose and muscular substance, forming sides of the wound leading to the bladder—(i) the external perinæal wound made by operation, which soon contracts in its course towards the bladder, being at (k) only big enough to admit a small probe, but again enlarging at (l) and continuing of considerable size where it communicates at the superior letter (n) with the cavity of the bladder; the deep unhealed wound extends from (l) behind the bladder and vesiculæ seminales, as far as (m)—and (n) inferior points to two small openings in the membranous part of the urethra, leading also to the wound (l)—such extensive cavities, in which the urine lodged, can only be explained by ulceration, or formation of abscesses, and are not to be regarded as produced at the time of the operation. *(See case 22 in Appendix,* No. 1.)

Fig. 4. The parts removed, in a hasty examination of a gentleman aged sixty-seven years, who died thirty-six hours after the operation of litho-cystotomy. After a slight section of anterior part of the prostate gland, the operator used the gorget, which passed between the bladder and os pubis, instead of entering the former, inflicting fatal injury. The bladder was at length reached, and in the extraction of a large calculus, the firm and undivided portion of the prostate gland would not give way, but an opening was effected by yielding and laceration of the

anterior part of the neck of the bladder, and the thin anterior portion of the prostate gland, both situated immediately behind the symphysis pubis—(a) membranous part of the urethra—(b, b,) external surface of the lateral lobes of prostate gland—(c, c,) prostatic urethra laid open; the superior letter rests on the undivided part of prostate gland—(d, d,) section, in an oblique direction downwards and outwards, of the anterior part of left prostatic lobe—(e, e,) ureters—(f, f, f,) external surface of the bladder—(g, g,) its coats, divided by removal of its anterior part—(h) its cavity, the lining membrane falling into rugæ—(i, i, i,) orifices of three sacculi of the lining membrane—(k, k,) the anterior part of neck of bladder, which is lifted up by a piece of quill (l) shewing the lacerated opening beneath it, which is further denoted by two bristles (m, m;) it was beneath this portion (k, k,) and by a further laceration of the anterior part of the prostate gland next it, that sufficient opening was obtained for the extraction of the stone. (*See case* 17 *in Appendix*, No. 1.)

PLATE XXII.

Fig. 1. The parts concerned in litho-cystotomy, from a patient sixty-five years of age, who died seven days after the operation, from infiltration of urine into, and suppuration of, the reticular texture about neck of the bladder and lower portion of the rectum; three flat lithic acid calculi, weighing nine drachms and a half, were removed. A posterior view of the bladder is presented, and it is demonstrated that the membranous part of the urethra was opened in the operation, some way past the bulb, and a lateral section of the left lobe of the prostate gland effected—(a, a,) crura penis—(b, b,) corpus spongiosum—(c) the bulb—(d) one of Cowper's glands—(e) posterior surface of right lobe of prostate gland, which was enlarged, measuring an inch and half in its transverse diameter—(f) the outer posterior surface of left prostatic lobe—(g, g, g,) the divided prostate gland, its edges separated to give a better view of the wound—(h) marks a bougie in the urethra, the end of

which appears in the wound at (i)—and (j) rests on the anterior wall of the prostatic urethra, where the gland remains entire—(k, k,) vesiculæ seminales—(l, l,) vasa deferentia—(m) posterior outer surface of bladder above these—(n, n,) the ureters—*(See case* 13 *in Appendix, No.* 1.*)*

Fig. 2. A calculus, weighing above two ounces, was removed in this case by the lateral operation; all went on well for ten days, when there occurred rigors, followed soon by signs of acute pleurisy of the left side of the chest, from the effects of which the patient, aged sixty-nine years, sunk and died five weeks and two days after the operation. A pint of purulent fluid was found in the left pleuritic cavity. The view of the bladder and appendages, presented in this figure, exhibits a perinæal fistula remaining, communicating with the bladder by a narrow channel; and the wound of the prostate gland unhealed—(a, a, a,) external surface of the bladder—(b, b,) ureters—(c, c,) coats of the bladder, cut across in removal of its anterior part—(d, d,) its cavity exposed—(e, e,) termination of ureters in the bladder marked by a bougie inserted into each—(f, f,) external view of lateral lobes of prostate gland—(g, g,) anterior part of the gland divided, and the surfaces separated from each other, exposing prostatic part of urethra (h, h,) and shewing the section of the left lobe of prostate unhealed—(k) marks the unhealed wound of prostate—(l) external prominence of the bulb, and (m) bulbous cavity, of the urethra—(n, n,) small portion of external integuments—(p) the anus—(q) the remaining small perinæal wound, which is continued by a narrow sinus (r, r,) to the neck of the bladder, and membranous part of urethra, a common probe (s) being passed along it, and appearing at (t) in the urethra, behind the bulb.—*(See case* 19 *in Appendix, No.* 1.*)*

PLATE XXIII.

These parts refer to a patient, aged fifty-five years, who died a week after lithocystotomy, from infiltration of urine into, and extensive suppuration and sloughing of, the cellular texture anterior to the neck of the bladder. The stone removed

was small, weighing ʒiij ɔj. The patient was a corpulent tall man, accounting for the great depth at which the neck of the bladder lies from the external wound—(a) fundus of bladder, covered with peritonæum and much adeps—(b, b,) external lateral surface of the same—(c, c,) its divided coats—(d) internal cavity exposed by removal of anterior part of the bladder—(e, e,) external view of lateral prostatic lobes—(f, f,) anterior part of prostate gland, divided in the median line, to lay open prostatic urethra (g)—(h) surface of left lateral lobe of this gland, seen in urethra, the line between (g) and (h) marking the course of the oblique section of this lobe, effectually made in the operation—(i) a bougie in urethra, the end of which appears in its prostatic part (k) where laid open—(l) root of penis—(m, m,) its crura cut across—(n, n,) portion of integuments of perinæum, surrounding (o) the external wound, which is represented not with its proper obliquity, but nearer a transverse direction, to bring the better into view (p, p,) the track of the incision, in its course towards the neck of the bladder.

PLATE XXIV.

The bladder was in this case immensely thickened in its coats generally, and the inner membrane very morbid; two calculi removed, weighing three ounces and a half; the patient, in his seventy-ninth year, died eight days after the operation, from the conjoined effects of peritonitis, and urinary infiltration and suppuration of the cellular texture within the pelvis—(a, a, a,) rest on the outer surface of the bladder, the coats of which are divided, by removal of the anterior part of the organ—the muscular coat (b, b,) is no where less than half an inch in thickness; the lining membrane (c, c,) about one eighth of an inch—(d, d, d,) a layer of adipose substance external to the muscular coat; this was purulent and sloughy from urinous infiltration—(e, e,) the cavity of the bladder, the lining membrane in folds, and covered with adherent lymph—(f) a large opening in the prostate—(g, g,) external view of the lateral lobes of that gland—(h) root of the penis, cut across at

(i,) shewing corpora cavernosa, corpus spongiosum, and the small orifice of the collapsed urethra—(j, j,) perinæal integuments surrounding (k) the external wound.

PLATE XXV.

This specimen was obtained from a gentleman aged sixty-two years, of very irritable temperament, who died five days after the operation, from its effects upon his nervous system and a reduction of power by one large loss of arterial blood whilst on the operating table—(a) the posterior part of the bladder, covered with peritonæum—(b, b,) anterior part of the same, the peritonæum removed—(c, c,) the divided coats of the bladder, an oval lateral portion being removed, to expose its cavity (d)—(e) left vas deferens—(f) left vesicula seminalis—(g) left lobe of prostate gland, divided freely by an incision obliquely downwards and outwards—(h) an additional part of its left lobe, lying anterior to the preceding, and also divided in the operation—(i, i,) is the levator ani muscle distinctly seen, the surface on which the upper letter rests being turned back from the prostate, whilst the lower letter designates the part joining the sphincter ani—(k) the rectum opposite prostate gland, cut off at (l) and at (m) laid open, shewing the rugæ of its lining membrane—(n) fibres of sphincter ani muscle—(o) root of penis—(p) corpus spongiosum urethræ, anterior to the bulb—(q, q,) perinæal integuments surrounding (r) the external wound—(s, s, s,) adipose substance—(t, t,) track of the wound made by the operation, laid open in a great part of its course, by removal of its left lateral walls, and distinctly traceable from the external wound to the divided prostate gland—(u) the arteria pudica interna, which, after giving off the artery of the bulb, is continued as (v) the arteria dorsalis penis; the arteria pudica interna was opened without being cut across, on the side next the wound, so that the small opening is not seen, but is marked by the bristle (w, x,) which, introduced from above, passes downwards within the vessel for some extent, and escapes at (y) by the wound effected in it—(z) vena ipsius penis.

PLATE XXVI.

From a gentleman, seventy-two years of age; four flattened-oval lithic-acid calculi were removed, followed by considerable bleeding, which was effectually arrested by plugging around a gum-elastic canula; he died from nervous exhaustion, eight days after the operation. The parts here exhibited shew the relation of the arteria pudica interna to the wound; the bleeding was furnished by a small branch of it, probably the transversalis—(a) root of penis—(b, b,) outer surface of the bladder, covered by peritonæum —(c, c,) divided coats of the same, unusually thin —(d) its cavity—(e, e,) anterior part of the prostate gland, divided and separated, shewing (f) the prostatic urethra, considerably extended—(g, g,) mark, by a dotted line, the course of the lateral incision of the left lobe of the gland, the anterior part only being cut, the deeper part at neck of bladder dilated, to allow the removal of calculi—(h, h,) perinæal integuments, surrounding (i) the external wound—(k, k, k,) adipose substance about the wound—(l, l, l,) cut surface in removal of the left cavities of wound—(m) a portion of the left crus penis turned up—(n) a common probe, shewing the whole track of the wound (o, p, q,) from the perinæum to neck of the bladder—(r, r,) arteria pudica interna, into which a bristle (s) is inserted, appearing at (t) where the left half of the arterial coats is removed longitudinally, to shew the remaining half, situated nearest the wound, entire, proving that this artery was not wounded, though situated so near to the edge of the scalpel.

PLATE XXVII.

Fig. 1. This drawing exhibits most extensive injury from litho-cystotomy, the rectum being wounded, and urinous sinuses formed between it and the bladder—(a) is on the root of the penis—(b) the left crus penis cut across—(c) anterior surface of symphysis pubis, covered by soft parts—(d) posterior surface of the same—(e, e,) body of the bone cut through on left side of symphysis—(f) fundus of the bladder,

covered by peritonæum—(g) posterior part of the bladder, below where the peritonæum is reflected—(h, h,) coats of the bladder divided in removal of its anterior part—(i) its cavity exposed—(j) left lobe of the prostate gland—(k) left vesicula seminalis—(l, l,) vas deferens and (m) ureter, of the same side—(n) a portion of detached peritonæum dependent—(o, o,) part of the colon, cut across at (p)—(q, q,) are placed on the outer surface of the rectum—(r, r,) external integuments surrounding the perinæal wound—(s) the anus—(t, t,) portions of the levator ani muscle—(u, u,) the track of the wound into the bladder, which is continued as an urinous sinus (v, w,) past the vesiculæ seminales, between the rectum and bladder, as far as where the peritonæum is reflected from the one to the other; a common probe, introduced through the external wound, traverses the course of this sinus, its extremity appearing in the deepest part of the sinus at (w)—at (x) I have exposed the interior of the rectum, by removing a portion of its coats—(y) shews the communication between the wound (u) and the rectum; the opening is large enough to admit the finger.

Fig. 2. Represents the bladder and rectum, taken from a patient aged sixty-four years, who died four days after litho-cystotomy. The pelvis was so narrow, and the perinæum of so small extent, that the operator stated he could not make the usual external incision above two inches long, without passing the level of the anus. The rectum was wounded in the operation, and the foremost part of the left vesicula seminalis was cut, as well as the left lobe of the prostate gland divided through its whole extent, to allow a calculus, weighing rather more than three ounces and a half, to be extracted. Extensive inflammation of peritonæum, as well as infiltration into the cellular texture, were found on dissection, accounting for death—(a) the outer surface of bladder—(b, b, b,) its divided coats—(c) its small cavity—(d) left ureter—(e) root of penis, this organ being cut across at (f)—(g, g,) integuments—(h) the anus—(i) the external perinæal wound—(j, j,) course of the rectum—(k) its interior, exposed by removal of a left lateral portion of its coats—(l, m, n,) the course of the wound exposed, from perinæum to neck of the bladder; the last of these letters (n) shews the great extent of the wound in the bladder, reaching near to the termination of left ureter—(o) is a sinus continuous

with (m) and (n) situated between the bladder and left vesicula seminalis (p)—the bristle (q, r,) shews the communication between (o) and (n)—(s) is the left lobe of prostate gland, cut through—a bougie (t) is in the urethra, and appears in the wound at (u)—(v) is upon the bulb—(w) an opening from the wound (l) into the rectum (k) large enough to admit the finger, the bristle (x, x,) being passed through it. It would no doubt be erroneous to suppose that the cavities (l, m, n, o,) and the opening (w) from the wound into the rectum, were made at the time of the operation, of the size here represented, as sloughs separated and passed away by the wound, which would account for their enlargement.

PLATE XXVIII.

Fig. 1. A straight sound for an adult; it should not be so large as to distend the urethra, and every part of its surface ought to be well polished: the handle where united to the body of the instrument (a) is thicker than at the end (b,) giving the advantage of a wedge for impressing the fingers under certain movements.

Fig. 2. A common curved sound, the handle broad, polished and wedge-shaped.

Fig. 3. A sound with a longer and greater curve than the preceding; it is of the size suited for a boy, but is intended to shew the proportions of a sound long enough in its curve to project much into the bladder, which is sometimes, though rarely, required. The handle is large, as in the sound for an adult, because it has reference to the surgeon and not to the patient.

Fig. 4. A sound with the curved portion very short, intended to be used in the urethra as a straight sound, that it may be turned round its axis, making the curved portion describe in the bladder a circle, or any part of a circle; introduced into the bladder with the curve upwards, as represented by the dotted outline (c) it is turned half-round, bringing the curve into the position (d) thus exploring the vesical cavity behind the prostate gland.

Fig. 5. The urethro-vesical forceps, shewing the stone seized between different parts of the blades—in (e) it is situated too far from the end, the instrument pro-

jecting too far into the bladder—in (f) the reverse has taken place, and the stone will slip out of the blades when extracting force is applied—in the third position (g) the stone is favourably placed between the blades for its removal. This figure represents the instrument, as it was first employed, but it is better to have a shorter length of curve, which is found more convenient in bringing the stone through the urethra, and in most cases equally so for seizing it.

Fig. 6. A more powerful instrument for removing small vesical calculi through the urethra, the blades compressed by passing through a cylinder (h) which should admit of being easily removed, that, when not in use, it may be kept separate from the part (i, j,) which passes through it, in order that it may be cleaned and preserved from rusting. When the curved blades are of equal length, they are liable, on closing, to catch the lining of the bladder, to prevent which accident, one blade (k) should be longer than the other, and constructed to over-lap it; a small calculus grasped by the blades, and brought into the urethra, will be prevented from escaping by the projecting end (k) of the longer blade. When the instrument is introduced into the bladder, the curved part may be made to describe a whole or any part of a circle, and turned from the direction (j, k,) to that of the dotted outline (l)—but before being brought out of the bladder, the blades of course should be put into the first position (j, k,) with the curved part turned upwards.

Fig. 7. Urethro-vesical forceps with the blades opening postero-anteriorly;[2] being opened when in the bladder, as (m, n,) the blade (m) is pressed towards the other (n) by acting upon the projection (o) and moving it to (p.) With this instrument you may actually measure the size of a calculus in the bladder. The longest curve that can be used is here represented; but a more useful instrument would have the curve nearly an inch shorter. This is found to be one of the most effectual instruments for removing small calculi from the bladder.

[2] With forceps of this construction, I lately removed from the bladder above five inches of a metallic flexible catheter, bringing it forward near to the termination of the urethra, and there making an incision upon it; the patient, a very feeble man, aged eighty-two years, and worn down by suffering from a diseased prostate gland, died not long afterwards, affording me the opportunity of ascertaining that the neck of the bladder had undergone no laceration.

PLATE XXIX.

Fig. 1. The improved straight staff with two handles—one (a) for the operator, and the other (b) at a right angle with the body of instrument, for the staff-holder; this is the size for an adult.

Fig. 2. The same instrument suited to a boy.

Fig. 3. A blunt gorget, to be used after having cut into the bladder; it has a prominent and bold beak, answering to the deep groove of the staff.

Fig. 4. A conductor for the forceps, to be employed for re-introducing them; held in the right hand, it is passed upon the left forefinger into the bladder, with the convex surface upwards, as in (c) and then (the finger being withdrawn) it is turned to the position (d) presenting its handle conveniently for the left hand, and its concavity upwards as a channel for the forceps.

Fig. 5. The curved staff for an adult, with the two fingers and thumb of the staff-holder drawn in proper position; this instrument should be as large as the urethra will well admit.

Fig. 6. A pair of lithotomy-forceps represented, of middle size, the blades at (e) leaving an interspace of above one-fourth of an inch, to prevent their taking hold of the lining membrane of the bladder; the ring at the handle should be of full size, for small as well as large forceps, and not as usually made.

Fig. 7. A lateral view of the curved lithotomy-forceps.

Fig. 8. A piece of wood armed with sponge, convenient for clearing a deep wound, as after litho-cystotomy, when we examine to secure a bleeding vessel—(f) represents the wood with a slit at the end—(g) the same with a portion of sponge fixed to it. A *stick-sponge* of this simple form will be found of great service on many occasions.

APPENDICES.

APPENDIX I.

CASES OF LITHO-CYSTOTOMY.

CASE I. IN a Public Institution, a man forty-five years of age was placed upon the table to undergo the operation; three surgeons felt the stone with the sound. An external incision, scarcely more than two inches long, was made in the usual oblique direction, but so high that the urethra must have been opened at its bulb. A straight cutting gorget was used, and on its being pushed into the bladder, urine flowed by the wound; when the forceps were introduced, no stone could be found, and after persevering fruitless attempts for forty-six minutes, the patient was sent to his bed. The finger of the operator was never put in ano, nor was the staff re-introduced; the means employed to discover a stone were by the fore-finger or forceps, passed in different directions in the bladder. In the evening of the same day, a calculus as big as a pigeon's egg, and weighing above two drachms, passed away spontaneously by the wound. The patient had a rapid recovery. I took note of this case when a student.

Numerous examples are on record of the stone passing away after this manner, or presenting at the wound, some hours after unsuccessful cystotomy; and the chance of its happening affords a reason why the operator should not too long persist, and keep his patient on the table, when the stone is not discoverable. When the external incision is too small, and situated high up towards the pubes, the forceps cannot move freely to every part of the vesical cavity, and may pass over a considerable stone without its being felt.

CASE II. So early as the year 1809, I was present at an operation for stone on a boy seven years old; it was the first operation of the kind the surgeon had performed, who seated himself on a chair, before the patient, placing his right foot upon a small stool, so that his elbow might rest upon the knee of the same side. The external incision was three inches long, beginning at the scrotum and extending some way past the anus. Abernethy's cutting gorget was used, and as soon as it was pushed forward into the bladder, urine flowed through the wound. The stone could be felt readily, but not grasped with the forceps; the operator, after repeatedly using the forceps, and introducing his finger into the bladder, was seized with cramp in the hand, incapacitating him from proceeding. After much delay and difficulty, a calculus the size of a nutmeg was extracted, having a projection one-third of an inch long rising from one part, which it was believed extended into the orifice of one of the ureters, explaining the difficulty met with in its extraction. The patient was placed in bed lying on his left side, with the thighs drawn up and knees bent; pulse one hundred and twenty the day after the operation; perinæum swollen, and chief part of the urine passing by the urethra. Next day the pulse ninety; fourth day a rigor, part of the urine again passing by the wound. A speedy recovery.

CASE III. I was present at an operation upon a patient aged fifty-nine years, by an hospital surgeon long since deceased, in which the grooved staff and gorget were employed. After having extracted one stone of considerable size, the operator could not feel any more with either forceps or finger, and retired therefore to wash his hands, after ordering the patient to be removed; another surgeon examining the stone

just extracted, observed that one side of it looked smooth; the bladder was again explored, and two more calculi, equal in size to the first, were extracted; from too violent pressure with the forceps, and want of sufficient caution, the last stone was broken into many fragments. As much hæmorrhage attended the operation, the wound was stuffed with lint; nevertheless the patient was dismissed cured at the end of one month.

Case IV. The first patient whom I lithotomized at the Norfolk and Norwich Hospital was Titus Cutting, aged five years; he was in pretty good health, exhibited rosy cheeks, and presented every circumstance so favourable for the operation, that I remarked it only required workmanship equal to the materials to make a successful case of it. Mr. Martineau, being the only one of my surgical colleagues present, supported me by holding the staff, and with the common scalpel I cut so deep, after the plan described in the preceding treatise, that he observed I had gone far enough, and I entertained no doubt of having divided freely the prostate gland. The blunt gorget entered most readily, and upon it (keeping in mind the tender age of my patient,) I introduced my little finger into the bladder; but not feeling the stone, I introduced my left fore-finger with considerable force, and was sensibly impressed with the yielding of the neck of the bladder to admit the finger, with which I touched the stone; and having ascertained precisely its size and situation, I introduced a pair of small flat forceps, and immediately seized and removed it, without encountering any resistance. The operation, I was subsequently informed, lasted one minute and a half. At the end of six hours the draw-sheet, placed under the patient, was moistened several times, the urine passing freely by the wound, less and less tinged with blood, so as to be at length colourless; refreshing sleep had also been gained. Next day the perinæum was swollen and convex; the urine however flowed well by the wound and no unfavourable symptom was present. On the 23rd the swelling of perinæum had abated, allowing the lips of the wound to open a little, which, the preceding day, were more closed; urine in the course of this day was several times voided, in part *per penem*, at first bloody, then turbid, and at last quite clear. On the 26th, five days after the operation, all the urine passed through the natural passage, of a pale straw colour, with very little mucous sediment, proving the irritation of the lining membrane of the bladder to have subsided, and no considerable internal wound to be remaining; so I dressed the wound with ointment, made pressure by a compress of lint on one of its edges to bring them both on a level, and applied a strip of sticking-plaster across the buttocks tightly, to bring the edges of the wound together. From this date all the urine continued to flow the right way; in twelve days the little patient quitted his bed, the perinæum being supported by a T bandage, and sixteen days from the performance of the operation, he was dismissed perfectly cured.

This is the usual course of events in boys under ten years of age, where the stone is not large and the operation tolerably well executed; and from such cases the surgeon derives more gratification than from any other of the capital operations of surgery.

When the swelling and tenderness of the perinæum have subsided, and the urine begins to flow in considerable proportion *per urethram*, being clear and straw-coloured, or having only a thin cloud of mucous sediment, shewing that inflammation of the bladder and its consequences are no longer present, and that there is no extensive internal wound furnishing a secretion, it is allowable to treat the perinæal opening as a common wound, according to the approved rules of our art, adjusting the surfaces and edges, making appropriate pressure, and even using a long strip of adhesive plaster across the buttocks. In young patients, this treatment is often admissible in six or eight days, and a complete cure is effected in a few days more, but in adults it may be a considerable time, two or three weeks,

even in prosperous cases, before all the favourable circumstances I have mentioned, regarding the condition and flowing of the urine, are present so as to warrant the use of direct means for closing the perinæal wound.

Case V. John Whitrod, fifty years of age, became an hospital patient on the 30th of September, 1826, having suffered from symptoms, indicating a stone in the bladder, for two years. After each micturition, violent straining continued for several minutes, and every two or three days the symptoms were aggravated, and much pain complained of in the loins. The urine deposited much muco-purulent sediment, which unfavourable sign, however, diminished somewhat in a few days, by quietude and hospital-discipline. The tongue was covered with a white fur, but the pulse good at seventy in a minute. On the 10th, 11th, and 12th of October, there was *stillicidium urinæ* during the night, and I judged a calculus lodged in the neck of the bladder; still the pulse being steady as before, and the condition of the bladder, in regard to its catarrhal excretion, improved, I was about to lithotomize; but I could not succeed in getting either staff or sound into the bladder, as often happens when the stone lies at the neck of this viscus, exciting spasm of the muscles there situated. The stillicidium having ceased, I lithotomized this patient on the 26th of the month, and my notes state that I touched the groove of the staff at the second cut with the scalpel, which I carried on in its groove till the handle was half buried in the wound, the patient being a very large and corpulent man; I extracted five calculi of similar shape, weighing together nearly two ounces. In four hours, the urine had flowed repeatedly on the sheet, and become free from all bloody tinge. On the 27th the perinæum was swollen, making the wound more closed, and causing some urine to pass by the penis. The pulse never rose above eighty; motions were obtained by a dose of castor oil on the 29th, after which date, all the urine continued to pass by the natural passage, mixed with very little mucous sediment, so I compressed the perinæum firmly by a T bandage, kept the knees close together, which had before been at liberty, and by appropriate dressing to the wound, including the use of *argenti nitras*, it soon entirely healed, and the patient was walking about well within eighteen days from the performance of the operation.

Case VI. Edward Lines, a healthy and strong man, twenty-four years of age, was admitted into the hospital in February, 1827, having suffered symptoms of stone for five years; the weather being then very cold, the thermometer descending each night as low as 11° of Fahrenheit's, I deferred operating until the first of March. The stone removed was globular, and weighed ℥j ʒij ℈ij. The only circumstance worth noticing in the operation is, that a considerable artery bled freely near the bulb, which I did not secure by ligature, until I had extracted the calculus, having to deal with a rather plethoric patient, who could well bear the loss of a little blood. In the evening there was pain in the region of the bladder, and also pain in the lower part of the abdomen, just above Poupart's ligament, on the right side; but pressure could be borne, the urine flowed freely by the wound, and the pulse beat only eighty in a minute, satisfactory indications that no active inflammation of a membranous surface was going on. As the perinæum inflamed a little, the pulse rose to one hundred, but subsided on the fourth day, leaving apparently no unfavourable indication. At the end of a fortnight, however, all the urine continued to flow by the wound, although this was granulating and healthy in appearance; when I compressed the region of the bladder, just above the symphysis pubis, one or two ounces of urine flowed from the wound, part of it turbid like whey, proofs of an urinous cavity about the neck of the bladder. I put the patient on a better diet, and after a few days more, thought of introducing a catheter *à demeure;* but I deferred it until a month from the operation, when the urine still flowed almost entirely by the

wound, was turbid, and accompanied by pus; when I introduced the catheter down to the membranous part of the urethra, it did not pass on centrally, but inclined to the left side, entering a sinus in that direction, and under the gentlest handling, giving great pain to the patient; which I regarded as very sufficient reasons for desisting. On the 3rd of April, I noted that the patient's spirits were depressed; he thought he should not recover, and was rendered more gloomy by learning the fatal issue of a case in the same ward; the pulse one hundred and ten, the body and limbs considerably emaciated, the tongue parched in the centre and furred at the edges: on pressure being made over the region of the bladder, an ounce or two of urine still issued from the wound, the latter portion of it clouded with mucus. After this date, a small proportion of the urine was voided by the penis; between the 17th and 21st, repeated rigors occurred; I administered quinine-bark and some wine, cheered the spirits as far as I could, and encouraged the patient to sit up some hours in the day, to which he was disinclined. No pain was complained of, nor any tenderness on pressure being made either upon abdomen or perinæum: still it was clear that the health suffered from an urinous cavity, and that the rigors arose from the impediment to the evacuation of the urine, which was driven into this cavity at each contraction and emptying of the bladder. Unless a hollow catheter were kept in the bladder, I saw no surgical treatment called for, and considering that much depended on the health and strength of the patient being maintained, to which fresh air, exercise, and good spirits, would essentially contribute, I acceded to his wishes, (for he was become quite nostalgic,) and sent him to his residence in the country; and although on his leaving, much purulent matter was discharged with the urine, I had the gratification to learn, from the respectable practitioner, to whose care the case devolved, that in a month there was a perfect recovery of health under tonic medicines and full diet, and a sound healing of the wound made by the operation, without the adoption of any particular local treatment.

This patient, for the reason stated, was nearly a month in the hospital before being operated on, during which he underwent preparatory treatment, by rest, careful diet, and occasional doses of castor oil. In an operation of this sort, implicating the life of the patient, as well as the credit of the surgeon, every precaution should be used, that can be supposed in any degree to increase the chance of a successful issue. Consider how much pains are taken, on occasions less worthy of them, by the training and dieting of boxers previous to a prize-fight! and shall the surgeon, when the opportunity is afforded him, as generally it is in the operation in question, be less attentive and careful to prepare his patient, whose existence is the prize?

Case VII. I admitted Robert Youngs, and the two patients whose cases I shall next detail, into the hospital on the same day, 28th April, 1827. Robert Youngs was a healthy young man, and had borne symptoms of his disease only for one year. I operated with the scalpel and blunt gorget; the stone breaking into numerous fragments, I had to remove it by repeatedly introducing the forceps, and once or twice the scoop. I syringed out the bladder with warm water, to remove small remaining fragments. The symptoms were very favourable for above two days, and the pulse only eighty; but on the third night, he began to suffer pain in the lower part of the abdomen, and in the perinæum, which increased so much that I was summoned at two o'clock in the morning, when I found a furred tongue, nausea, fever, pulse at one hundred; there was neither fulness nor tenderness of the abdomen, pressure being well borne; but the perinæum and contiguous part of the scrotum were greatly swollen, little urine had for some hours been passed, although the bladder was not distended; hence it was clear that there was urinous infiltration, extending towards the scrotum. I opened with my finger the wound freely, to the neck of the bladder, and kept the knees asunder; I also bled freely from the arm, administered

laxative doses and applied locally warm fomentations. The urine flowed plentifully by the wound in a few hours, and the fever abated; purulent matter was discharged from the wound on the sixth day; and finding the director pass several inches along the cellular texture, towards the scrotum, I made an extensive incision in this direction, kept cold lotion to the still inflamed parts, and a poultice to the wound. From this time ease was obtained, healthy granulations shortly arose on the exposed surfaces, and the cure was complete in six weeks.

Case VIII. George Catton, aged 64 years, followed the business of a shoemaker, and from the great frequency of such persons suffering from stone, it cannot be doubted that their sedentary occupation disposes to it. This man was possessed of tolerably good general health, but was of short stature, rather corpulent and abdominous. Examining the urethra soon after admission into the hospital, I found a stricture at four inches from the external orifice, and for six weeks treated him by bougies, before I reached the bladder. The prostate gland was large, but I notwithstanding felt a stone with the sound at rather less than seven inches from the end of the penis. For four years this patient had been subject to painful obstruction of urine, and for two years had suffered severe darting pain in the glans penis after evacuating it. I continued to use a larger and larger sound, until one of full size was admitted into the bladder. I operated on this patient, the same day as on the preceding one, removing an oblong stone, weighing an ounce and three quarters, with the outer surface formed of the fusible calculus, and coated by much adhering mucus, giving an offensive urinous smell, indicating the very morbid condition of the lining membrane of the bladder. An artery spirted freely from near the bulb of the urethra, which was pressed by the finger of an assistant, until I had extracted the stone; I then put a ligature on it.

The day following the operation, the patient had a very feeble, intermitting and irregular pulse, with the central part of the surface of the tongue brown and parched; but no tenderness of abdomen. I allowed malt-liquor in small quantity; no inflammatory symptoms arose; in three days the pulse improved in force and regularity, and the abdomen, which had been rather tumid, subsided to the size it possessed before the operation. Part of the urine passed by the penis, (and for a day or two nearly all of it,) so long as the perinæum remained a little swollen, but afterwards all passed again by the wound, until, at the end of about three weeks, under a generous diet, with half a pint of porter daily, healthy granulations had arisen, when the urine gradually took its proper channel, which a recumbent posture was found to facilitate; and a complete recovery was effected in eight weeks.

Case IX. Robert Howard, aged 4 years, had passed his urine with frequency and much straining for several months, but with so much pain as to make him scream out at each trial only a few weeks before admission into the hospital. After preparatory treatment by castor oil in small dose, regulated diet and warm bath, I ordered him into the operating theatre, but when placed on the table, his cheeks were flushed from febrile excitement, and his abdomen full and tender to the touch, so that both my colleagues, Mr. Martineau, and Mr. Dalrymple, advised that he should be sent back to his ward; it appeared that his sufferings had been great since I saw him on the preceding day, and that no urine had been voided for seven hours, although twice in the course of that time he passed motion. I directed leeches to the abdomen, warm bath and fomentations, and a calomel purge; the febrile state subsided, but his severe sufferings, arising from the stone, were unabated, and seemed to threaten to bring danger if not soon removed; I therefore, at the end of a week, operated and extracted a calculus weighing one drachm. The same evening, the perinæum was convex and swollen, and daily afterwards the child

had fever with flushed cheeks; no other unfavourable sign occurred, however, until the fifth day after the operation, when a cold chill arose, continuing for a quarter of an hour and giving place to a regular fever-fit. A restless night was passed, and on the sixth day the penis was swollen from serum in the cellular texture. In spite of cold evaporating lotions, the scrotum, by next day, was as large as an egg; I relieved it by scarifying, but soon it became evident that there was erysipelas spreading, a blush being present on each groin, attended by tumefaction; there was also a daily febrile attack, and the perinæal wound became pale, yellow at the edges and patulous, furnishing no healthy discharge. The tumefaction and redness gradually subsided in the parts first affected; an erysipelatous blush spread from the buttocks, over the loins, as high as the shoulders, occupying the whole of the back, and likewise proceeding, more slowly, downwards nearly to the knees; upon the buttocks and loins, there were considerable tumefaction and a few vesications, but, on the more distant parts, the disease was marked by a pink hue only, without vesication and with very little swelling. After lasting two or three days, the redness went off, and the cuticle desquamated, so that on the fourteenth day from the operation, all erysipelatous affection had disappeared, save that the scrotum, prepuce, and left buttock were swollen from remaining serum; still the child did not regain appetite, the system was emaciated, countenance and lips pale, with restlessness and a fretful state of mind. Sulphate of quinine and dilute wine failed to rouse the exhausted energies of the system, and death ensued at the end of three weeks. The viscera of the abdomen, when inspected, exhibited no marks of disease; neither did the bladder nor the other contents of the pelvis; the only visible effects of the erysipelatous disease were the presence of a quantity of yellowish serum in the cellular tissue of the prepuce, scrotum, groins, upper part of the thighs, buttocks, loins, and anterior part of the abdominal parietes, from the pubes as high nearly as to the umbilicus. The parts concerned in the operation are represented in plate xxi, fig. 2; the urine took a direct course from the bladder to the wound in the perinæum, without any lodgment or infiltration; the fatal issue was from erratic erysipelas and the attendant fever, destroying the remaining powers of a very feeble system.

For sometime after this date, erysipelas continued so rife in Norwich, that fatal attacks occurred after bleeding, cupping, leech-bites, and the simplest incised wounds, making it unsatisfactory to the surgeon to undertake any operation, whether in or out of the hospital; in this institution lithotomized patients were not spared; the particular tendency to this disease continued for above two years, and owing to this danger, in the year 1829, only three patients underwent the operation of litho-cystotomy within its walls.

Case X. On the 8th of January, 1818, Mr. Bond, formerly one of the surgeons to the Norfolk and Norwich Hospital, operated upon a man sixty-nine years of age. The symptoms were stated to have existed only two years; but the staff seemed to pass over so large a calculous surface when moved about in the bladder, that the stone was pronounced to be very large, and an ample external incision was made accordingly. It seemed to me that the staff was bared at the bulb of the urethra, and a copious flow of venous blood took place. The bladder being reached by the scalpel, a blunt gorget was used to conduct the forceps into the bladder. The stone was soon grasped by the forceps, but not soon extracted, the wound requiring to be enlarged repeatedly, in a direction downwards and outwards, with the scalpel; Mr. Martineau, who was present, feeling resistance from the soft parts, on the opposite side, towards the symphysis pubis, cut a little in that direction; and at length a stone weighing five ounces was extracted. In forty-eight hours, the abdomen was painful and very tender to the touch, pulse one hundred and twenty; two copious bleedings from the arm relieved the symptoms; the blood

drawn was buffy and much cupped. Next day, troublesome singultus arose, with violent and painful purging; the pulse subsided to eighty-five by the eighth day, but the singultus continued, recurring every two or three minutes on the 18th of January, after which date it abated, ceasing entirely in a few days, and allowing the patient a gradual recovery, so that he was discharged cured on the 28th of the following March.

In this case there was severe peritonæal inflammation, which, extending to the part of that membrane spread upon the diaphragm, will account for the hiccough; but this troublesome, and always very formidable symptom, arises from several other causes, as after profuse hæmorrhage, from suppuration of the reticular texture of the pelvis depressing the powers, or sloughing of the sides of a perinæal wound through which a large calculus has been forcibly extracted; in the treatment, the surgeon has to be guided by the cause giving rise to this symptom, and the condition of the nervous system of the patient; but I hold it to be a rule that when hiccough appears after litho-cystotomy, the patient will bear no depletory treatment.

Case XI. A soldier of middle age, who served in the battle of Waterloo, was operated upon by a staff-surgeon in 1816, who kept him more than an hour upon the table, and after putting him to bed, bled him in each arm. The patient recovered, but a small fistulous opening remained in perinæo, and the rectum having been wounded, fæces passed sometimes with the urine through the urethra. Such was his condition twelve months after the above operation, when it was discovered that a stone in the bladder was again formed, and a second operation of litho-cystotomy was performed with the scalpel and blunt gorget. Much pain was felt in cutting through the old cicatrix, proving it to be more sensible than the healthy skin. The stone was soft, as it usually is when formed under such circumstances; it broke under gentle pressure with the forceps, and was removed chiefly by the scoop, in numerous large fragments, weighing altogether half an ounce. The patient recovered in six weeks, and was cured of both rectal and perinæal fistula.

In other instances where litho-cystotomy has been repeated, the old cicatrix has been always found more dense and resisting to the scalpel, but never more sensible, than the original healthy texture. In this and other examples of a second operation curing fistulæ of perinæum, the incision has invariably been made in the situation of the fistulous opening.

Case XII. A surgeon long ago deceased operated upon a lad twelve years of age, who had laboured under symptoms of stone for six years. The operator had great difficulty in cutting down to the curved staff, and was several minutes before he could expose it. The gorget, when pushed on, slipped out of the groove of the staff, and when this instrument was withdrawn and the forceps introduced into the wound, no stone could be felt, neither did any urine escape; it was evident that the gorget, though received up to its handle in the wound, a length of between three and four inches, had not reached the bladder, and from the direction the instrument took, I felt no doubt about its having passed between the bladder and the rectum. The staff was again introduced and luckily entered the bladder, so that the stone was felt; the gorget this time was conducted along the groove of the staff in a right direction, and its entrance into the bladder marked by an ample gush of urine. The calculus removed weighed above one ounce; the patient, who lost a pint and a half of blood in the operation, had no unfavourable symptoms afterwards, and was cured in five weeks.

Where the gorget escaping from the groove of the staff, is pushed between the bladder and rectum, which I have repeatedly seen, the patient will often recover, particularly if the blunt gorget be the in-

strument so unfortunately employed. If, as will be subsequently related, (case 16,) the gorget pass anterior to the bladder, behind the os pubis, the accident is almost necessarily fatal. It has also happened to my knowledge, that the cutting gorget has, after entering the bladder, pierced its coats from within outwards, so as to stop against the os pubis; and such an occurrence is necessarily fatal.

Case XII. A man, sixty-five years of age, was treated for stricture of the urethra; soon afterwards he came under my care, and I found his symptoms to depend on a stone in the bladder, and that he had suffered marked signs of this malady for a year or two. I operated upon this patient for removal of the stone, cutting into the bladder from the perinæum after the usual method, with the scalpel, aided by the curved grooved staff. I employed the blunt gorget, which required very little force to make it enter the bladder, the scalpel having freely divided the prostate gland. The staff being withdrawn, I introduced the forefinger of my left hand, along the concave surface of the gorget, until I could feel the prostate gland, thus dilating the parts; but my finger was not long enough to reach the cavity of the bladder and to feel the stone. As soon as the forceps were introduced, I grasped a stone with them, but on attempting to extract it I found so much resistance at the neck of the bladder, that it was necessary to cut through the opposing parts with a probe-pointed bistoury. The stone removed was about one inch in diameter, circular, and much flattened; its smooth surface indicated that it was not solitary, and on introducing my finger into the wound, I could feel another at the neck of the bladder, just entering the wound, but I could not seize it with the forceps, until I had pushed it back fairly into the cavity of the bladder; a third stone was extracted; all were of the same shape, and weighed together nine drachms and a half.

Six hours after the operation, the pulse were only sixty; urine flowed through the wound. Next morning, pulse eighty; some clots of blood and a little urine passed by the penis. On the third day pulse ninety; it became quicker each day, until the sixth, when it was one hundred and ten; the patient now restless and fretful, delirious in the night; tongue dry and covered with a brown fur in the morning; occasional hiccough. The abdomen daily examined, was not found tender or distended, bearing pressure in every direction without inconvenience; the only pain complained of was referred to the sacrum, three inches above the anus. After this date, urine flowed very scantily through the wound, but an ounce or more escaped on pressing the abdomen above the pubes; this pressure caused no pain, and the escape of urine gave ease. For the first two or three days, the wound looked healthy, contracting to half its original size, and seeming disposed to unite by the first intention; fearing effusion of urine into the cellular texture, I separated the edges of the wound, to allow the urine a more free exit; as the unfavourable symptoms arose, the wound altered, its edges becoming sharp and dry, the surfaces yellow and pale; perinæum and parts around the anus swelled and puffy. These signs were enough to mark urinary infiltration; I avoided bleeding, which could only have been tried at an early period, when the patient seemed doing well, though the mischief was then taking place; by castor oil the bowels were timely relieved; anodynes, freely given, failed to obtain rest; support was afforded by bland nourishment, and the case protracted to the ninth day.

On dissection I found the peritonæal surfaces in the abdomen uninflamed and free from effusion or other marks of disease. On cutting into the tumefied parts in the perinæum and about the anus, I observed urine, mixed with oily globules, ooze out from the cellular texture, which was dark, sloughy and offensive; this state of the cellular texture was not confined to the perinæum, but extended around the whole of the lowest part of the rectum, and between this bowel and the sacrum for three or four inches above the anus, being precisely the situation of the great uneasiness complained of by the patient.

The cellular texture upon each side of the bladder, and upon the left iliacus internus muscle, was in the same sloughy state, containing, as I believed, urine, mixed with oily globules, fœtid air and pus. The cellular texture, upon the fundus of the bladder, and anterior part of the rectum above the reflexion of the peritonœum, was unaffected. In the rectum there was a table-spoonful or two of a transparent jelly, like white of egg or the contents of a ranula, which I deemed to be the secretion of the mucous glands here situated, as a similar substance had passed *per anum* before death. The bladder and appendages are represented in fig. 1 of plate xxii, giving a posterior view of the section of the prostate gland.

This case occurred at an early period of my practice; the symptoms led me to suppose that infiltration of urine had taken place, and that there was no peritonitis. To distinguish between these two different causes of danger is most essential, as in my judgment the free abstraction of blood by venesection is not equally suited to both. The effusion of urine, if it occur at all, must in all probability commence within the first twenty-four hours after the operation, and I presume it did so in this case, although the patient appeared to be going on prosperously for two or three days, during which the injury was not sufficiently extensive to shew its effects upon the system. Unless performed at a very early period, who would rely upon bleeding in such a case? When urine gets effused from rupture of the urethra, we do not, on ascertaining this, bleed largely to check the morbid action induced, but make free incisions through the skin, to allow the urine to ooze out, and to give discharge to the sloughs that must unavoidably form, if urine remain many hours in the cellular tissue. Should not the same practice be as far as possible adopted, when it is ascertained that urine is effused into the cellular texture after litho-cystotomy? the symptoms arise insidiously; the urinary infiltration takes place in parts deeply situated at the neck of the bladder, before it is observed superficially, extending its destructive effects to the cellular texture at the brim of the pelvis, over the iliac and proas muscles, along the loins, even to the diaphram, whilst little or no injury happens in parts accessible to the surgeon. To regard this diffuse suppuration of the reticular texture without reference to infiltration of urine, stating it as undistinguishable from, and requiring the same treatment as, peritonitis, I cannot help believing a most injurious doctrine.

Case XIV. Mr. B—— had for many years been troubled with a stricture of the urethra, and often treated himself by the bougie. It was in the month of March, 1818, that an attack of jaundice occurred to this gentleman, when he was fifty-five years of age; this disorder soon abated under medical treatment, but the urethral stricture got worse, creating great dysury, and rendering the daily introduction of a small gum-elastic catheter requisite for relieving the bladder. This was the condition of the patient in June, when my attendance was first called for; the urine could only be passed in drops, unless the catheter were employed, and the whole course of the urethral passage was in a most irritable state; the inflammatory action extended from the urethra into the bladder, and the urine, which before was clear when drawn off, became loaded with a great quantity of ropy mucus like white of egg; small gritty fragments, which proved to be fusible, entered the urethra and lodged behind the stricture, further increasing the irritation, and rendering the employment of the catheter more difficult. The stricture being diminished, the patient was able to void urine, but when he had passed all he could, I always found six or eight ounces remaining in the bladder; complaint was now made of pain at the glans penis, as well as at the neck of the bladder, on the urine being voided; and the former part was frequently compressed between the fingers to relieve itching and uneasiness; when also the bladder was empty, pressure above the pubes gave a shooting pain into the glans, and when urine was distending

that organ, the patient on turning from one side to the other in bed described that he felt something move or tumble about in the bladder, and change of posture, particularly from lying to standing, caused a sharp pain in the glans penis and neck of the bladder, lasting for several minutes. These symptoms strongly indicated a vesical calculus, which I readily detected with a metallic instrument; still the urine was not voided oftener than half a dozen times in twenty-four hours, owing, no doubt, to several ounces of this fluid being always in the bladder, preventing it from contracting closely upon the calculus so as to cause the usual urgent and tenesmal symptoms. The prostate gland, examined *per rectum*, was found to be not much enlarged, and the growth of this body towards the bladder, or in what is described as its middle lobe, would alone explain why the bladder was unable to evacuate all its fluid contents.

This patient's health being improved, the urethral stricture surmounted so that a full sized catheter could be passed into the bladder, and no morbid symptoms but such as a vesical calculus would create, (except that four or six ounces of urine always remained in the bladder,) I performed cystotomy by the lateral method on 26th of August, 1818, cutting into the bladder with a common scalpel upon a curved grooved staff. The stone proved so soft as to yield under the gentlest pressure of the forceps, and was removed in small fragments, some by the scoop, others by the curved forceps, which I introduced with the concavity of the blades upwards, then giving them a half-turn, so that their ends searched behind the enlarged prostate gland; by these means, and by syringing the bladder through the wound with tepid water, I got away all the fragments, which weighed four drachms and a half. I ascertained that the stone was a flattened oval, formed upon a soft nucleus of mucus; the external covering only was firm, all the interior being of the consistence of the yolk of a hard-boiled egg.

The patient went on favourably with a pulse at eighty, and urine flowing for the three first days by the perinæal wound. On the fourth day, castor oil taken by the stomach, and an enema administered, procured ample evacuation from the bowels. On the 31st of the month, part of the urine flowed by the penis, scarcely any by the wound; and in the evening of this day, there was darting pain in the glans penis, obstruction to all flowing of urine for a short time, then three or four ounces voided by the penis, with several clots of blood; in ten minutes he was seized with a rigor, which lasted half an hour, and "shook him as he never was shook before," followed by hot skin, restlessness, and pulse at one hundred and ten. Such a rigor arises after this operation on the sudden invasion of inflammation of the bladder, or of the peritonæum, or the formation of a circumscribed urinary abscess about the bladder; but in this case it was owing to the too early closing of the wound, and the passing of urine, with clots of blood, after difficulty and obstruction, by the urethra; next day the pulse were again eighty, the perinæal wound had re-opened, allowing part of the urine to take that course, and all went on favourably, save that the system shewed debility and the tongue had a little brown fur upon it, on account of which I gave bark and a more generous diet. A month after the operation, the health being restored, a little urine still passed by the perinæal wound; the flexible catheter was therefore employed to draw off the urine several times in a day, and thus the cure was soon completed, except that the bladder continued unable to empty itself, four or five ounces remaining in it.

This patient still lives, sixteen years after undergoing cystotomy, and has had no relapse of stone; but he has suffered occasionally from stricture of the urethra, and been required to introduce the flexible catheter every week or oftener, in order to empty the bladder of several ounces of remaining urine, which he was otherwise incapable of evacuating.

Case XV. John Platford, aged sixty-eight, had suffered uneasiness at the neck of the bladder for above two years, and very severe pain for several months. When he applied to me, he had the symp-

toms of stone in an extreme degree, passing water every ten or fifteen minutes, night and day, with excessive straining; the pain much aggravated by walking and a weight felt in the rectum; urine sometimes bloody. The countenance of this man was pale and haggard, like what is common with a Norwich weaver who has set hard to his work, but the rest of his body was bulky and his general health good. The urine depositing crystallized lithic acid, I gave alkalies for a time, which soon removed it; and on the twelfth of October, 1818, I lithotomized him, cutting into the groove of the curved staff with three strokes of the scalpel, and employing a cutting gorget for completing the opening into the bladder; I was led to use this gorget, because I deemed the prostate gland large, and the stone also of considerable size; the gorget entered the bladder readily, and I believe that its end stopped against the stone, which I quickly grasped on introducing the forceps, and extracted by firm and slow efforts, without injury to the soft parts, and without necessity for enlarging the wound; the stone weighed above nine drachms.

There was considerable bleeding, and a pint of coagulated blood was in the bed three hours after the operation. The urine, which flowed freely by the wound, was for the first day, tinged with blood, but afterwards colourless. On the second day the pulse intermitted, which was removed in twenty-four hours, by good animal broth being taken. On the sixth morning, after a sound sleep of an hour or two, the patient awoke alarmed—passed his water, after some obstruction, chiefly through the penis—and was soon seized with a severe rigor lasting several minutes, and leaving him feeble, thirsty and feverish, with a pulse at one hundred. I found a large clot of blood which had passed by the penis, and this obstructing the urethra for a time, caused the rigor. The pulse next day subsided to seventy-six, although I had given a little wine diluted, and also bark on account of the exhausted powers of the system, and a tongue with a brown coating. The urine having for two days passed partly by the penis, and partly by the wound, again flowed entirely by the latter channel, the swelling of the perinæum, which usually arises a day or two after the operation, having subsided. At the end of a fortnight all the urine passed by the proper channel, and in five days more the patient was walking about quite recovered.

After enjoying health for ten years, this man had a relapse of stone, on account of which lithontripsy was tried, as mentioned in the beginning of chapter ix of the text; death happened in three months, and the state of the bladder is represented in plate xix, fig. 2.

Case XVI. The following case, which I witnessed many years ago, under the hands of a deceased surgeon, who had several times operated before, may be turned to useful account by comparing the unexpected issue with the method of proceeding. The patient was forty-five years of age, stout and plethoric; the curved grooved staff was employed. After the second cut with the scalpel, the operator began to feel for the staff, and complained that he could not feel it; as soon as the urethra was opened, without the scalpel being carried deeper, the blunt gorget was pushed on upon the groove of the staff, and the latter withdrawn; no urine flowed, and the operator, as well as the spectators, doubted whether the gorget had reached the bladder; the operator forcibly thrust his finger along the concave surface of the gorget, but could not feel the cavity of the bladder. The staff was again introduced and a longer blunt-gorget taken, but when buried to the handle in the wound, it did not fairly enter the bladder, and it was evident to me that the prostate gland was pushed before this instrument, and had not been divided by the scalpel at all. The patient was a large man, and although the gorget was from four and a half to five inches long, it was buried in the wound without entering the bladder. I had observed that the external wound was not carried sufficiently low, past the anus, its lower angle

preventing the handle of the gorget from being sufficiently depressed, otherwise I think the force employed would have made so narrow and conical an instrument pass through the prostatic part of the urethra. The late Mr. Martineau being present, observed that in this dilemma he would use the cutting gorget, but there was not one at hand; the further use of the scalpel was not proposed. A third time the staff was introduced, and the blunt gorget, again forcibly pressed forward, although it did not enter the bladder, got into the prostatic urethra, and at last the forceps were by main force made to enter the bladder and touch the stone, either dilating or tearing the neck of the bladder. Here was an operation as completely accomplished by dilatation or laceration, as if any of the more complicated instruments of the ancient Marian method had been employed. Immense force was used in the extraction of the stone, which was of an oval shape, and as big as a hen's egg, weighing nearly two ounces. No dangerous symptoms ensued, and the patient's recovery was complete in ten weeks.

I have repeatedly known instances of the scalpel not being carried deep enough, and of the prostate gland in consequence being pushed before the blunt gorget, the operator succeeding by dilating the prostatic urethra and neck of the bladder; and the results of such cases have brought conviction to my mind, that this error is less dangerous than cutting too freely the prostate gland and neck of the bladder. If the surgeon misuse a keen scalpel or a cutting gorget, the effects are generally fatal to the patient.

Case XVII. Through the liberality of the surgeon who operated, I am enabled to give particulars of the following case to the period of its termination. The patient was thin and emaciated, having suffered symptoms of a vesical calculus for eight or nine years, and attained the sixty-eighth year of his age. The curved grooved staff was employed, and the external incision was free, so that the operator readily reached the staff in the membranous part of the urethra; a conical gorget, with one cutting edge, was used, and when pushed on up to its handle, no urine flowed; the forceps were also introduced into the wound, but no stone found. A suspicion now arose that the bladder had been missed; I advised the operator to introduce the staff again through the urethra, which was soon done and the stone distinctly felt in the bladder; the gorget, now employed again, entered the bladder, as was proved by urine escaping; a calculus, weighing an ounce and a half, was extracted. Sickness came on soon after the operation, with rapid small pulse, and a cold clammy state of the surfaces of the limbs; urine then ceased to flow by the wound; the vomiting became stercoraceous, and death ensued in thirty-six hours.

After the operation, I did not see this patient whilst living, but was present at the dissection. The peritonæum was entire, and where lining the abdominal parietes just above the symphysis pubis, it was covered by lymph, by which an adhesion was formed between it and the adjoining small intestines. The bladder was empty, and exhibited no extraordinary morbid condition, beyond what a stone of large size usually occasions. It was found that the gorget, escaping from the groove of the staff when first used, and leaving the urethra on the (patient's) left side, had passed anterior to the prostate gland, immediately behind the symphysis pubis, and gone still further, separating the peritonæum from the abdominal parietes for an inch or more above the level of the brim of the pelvis; there is no doubt that the forceps, when first introduced into the wound, took the same route; and the cavity thus formed was occupied by urine, creating a dirty and sloughy appearance of all the surfaces.

Where the gorget, after escaping from the groove of the staff, passes between the bladder and os pubis, particularly if it be the cutting gorget, and the patient an adult, fatal consequences, I should expect, will invariably follow: but it may prove otherwise, if the blunt gorget be employed and the patient juvenile.

Case XVIII. In the year 1821, I assisted a surgeon, at a great distance, in his first operation of this description, by holding the staff. The patient was sixty-nine years old, and had suffered severely for above a year. There was some difficulty in introducing the staff, as happens often to even very practised surgeons, who fail to possess naturally a tact for this delicate operation, and do not depress the handle of the instrument at the right time and in just the proper degree. Slowness, timidity, and want of a due conception of the operation, marked the first incisions, so that it seemed long before the staff was bared and evidence afforded to my touch of the scalpel resting in its groove. A cutting gorget was employed, with which the rest of the operation was well executed, and the urine, which had been retained by a jugum penis, a precaution deemed unnecessary by most experienced surgeons, gushed plentifully through the wound. The forceps, used as a sound to feel for the stone, did not detect it, but opening the blades, and giving a quarter turn to the instrument at the same time, brought the stone within the grasp of the instrument. It was thought that the stone was so brittle as to be crushed by the forceps; but this impression arose from the stone being grasped by the edges of the blades, and the prominences on its surface yielding as the stone escaped from their grasp. A more fortunate hold was obtained, and a calculus as big as a pigeon's egg extracted, though not until the resisting parts were further divided by a probe-pointed bistoury. An artery spirted freely in the superficial incisions, which was stopped by the finger of an assistant, whilst the operation proceeded; its progress needs not be interrupted, to secure such vessels by ligature, except in very feeble patients; and often the pressure in extraction of a considerable calculus stops the hæmorrhage, as well as prevents its returning after the operation is finished.

This patient's pulse were sixty-six before the operation; four hours afterwards, they were seventy only, and urine had flowed by the wound, as was proved by the moisture on the sheet being light coloured at the margin; had blood only escaped, the whole of the stain on the sheet would have been red. Next day the tongue was parched, much pain of loins was complained of, the skin hot, great restlesness, pulse intermitting; but sleep was soon obtained, all these symptoms were removed, and after three days the patient became cheerful and easy, progressing favourably. Fifteen days after the operation, the surgeon reported to me, that since the tumefaction about the wound subsided, (which usually happens in eight or ten days,) there had been little progress towards healing, the surfaces of the wound looking dull, unless touched with tinct. benzoes comp. creating fears that it should remain fistulous. In replying I observed, that, "in this as in other great operations, the first and greatest object is to have the patient live, the next, to have him get well without any draw-back upon the perfection of the cure. If the wound will not granulate and unite, the urine must in general be allowed to flow uninterruptedly through it. To me it appears that you need to strengthen your patient, and improve his health, as well as locally to stimulate the wound by proper dressings, frequently varying them. Allow a generous diet and remove the patient from his present lodgings to a more airy place; keep the knees approximated, when he is sitting up, and as the urine flows in great part by the penis, and there is no pus discharged from the wound beyond what ought to be furnished, close it by a long piece of adhesive plaster applied tightly across the buttocks, which, applied at the proper period, has often proved of great service. I recommend you not at present to introduce a catheter; it keeps the wound more open and is not advisable where union is delayed from want of activity in the parts, though occasionally a resource of value to the surgeon, where the flowing of urine through the wound is the only cause of its failing to close." The perinæal wound closed in a week or two under observance of these suggestions.

I have witnessed nearly a score of maiden operations of this sort, in a majority of which I encouraged the young surgeon and held the staff; and on looking back upon this part of my experience, of which

I can introduce few details, I am persuaded it is correct to state, that it would be for the public good if fewer surgeons lithotomized for the first time, and if those principally undertook the operation, who are so circumstanced as to be likely to have occasions for repeatedly performing it.

Case XIX. On the 23rd of July, 1823, I operated upon a patient, at a distance of many miles from Norwich, who was in his 70th year, and had during five years suffered severe symptoms of stone. I divided the prostate gland, as I believe, with the common scalpel, and used the blunt gorget to dilate the neck of the bladder. The calculus removed weighed above two ounces; a firm white substance, size of a marble, which I took to be a growth from the prostate gland into the bladder, was included in the grasp of the forceps and removed with the calculus. I have in other cases, particularly in a patient operated on by the late Mr. Martineau, seen such a substance removed, and cannot doubt that it is furnished by the prostate gland. I left the patient soon afterwards to the care of an intelligent surgeon on the spot, to whom I am indebted for the remaining history. "There were severe straining pains the same evening, at intervals of fifteen or twenty minutes, which continued till near midnight, and not observing any margin of urine about the red stain on the draw-sheet, nor any urinous smell, I judged the wound was closed, and the pain occasioned by contraction of the bladder upon its retained contents. I therefore pursued the course you pointed out, by introducing my finger into the wound as far as the neck of the bladder, and bringing away a coagulum; urine then flowed, and the patient obtained immediate relief. All went on as well as could be wished for nine days, and on the tenth he was attacked with pain in the chest, followed by a severe shivering fit. The pain was situated in the right side, about the seventh rib, and impeded respiration so much as to make the patient call out with the pain; pulse full and quick, and all indications present of a severe attack of pleurisy, for which I had attended him three or four years before. Bleeding, purging, blister, and antimonial medicines were applied, and on the third day from commencement of this attack, the pain being still acute, venesection was repeated; the blood was cupped and presented a leathery appearance on the surface; by this treatment and a repetition of the blister, ease was obtained and the health seemed improving. Three weeks from the operation, a part of the urine flowed through the right channel; but the patient suffered chilly and hot fits, with rapid pulse, and considerable cough and expectoration; the fever persisted and assumed a hectic character, notwithstanding appropriate medicines were administered. There has not been the least pain about the bladder or abdomen, and in my opinion, if death ensues, it will be from an attack of pleurisy." Death did ensue five weeks and two days after the operation. "The left lung was sound; the right adhered to the pleura costalis very extensively, and on tearing away the adhesions in the situation of the pain, a cavity was opened containing a pint of pus, part of which was fluid, the remainder of the consistence of clouted cream; this cavity no doubt communicated latterly with the bronchial cells, as purulent matter had for some time been expectorated, having a very putrid smell. There were no marks of inflammation in the abdominal cavity, nor effusion upon the peritonæal surfaces."

The bladder was sent to me, and is represented in plate xxii, fig. 2, shewing the course of the perinæal fistulous opening to the neck of the bladder; that the wound should not have healed, whilst so much disease, even of a destructive kind, was going on in a distant internal cavity, is what we should expect. The cellular substance about the neck of the bladder was in a suppurating condition, with urinary depôts connected with the wound; that the patient died from the effects of severe pleurisy, cannot be doubted; but is it clear that the suppuration in the pelvis, about the neck of the bladder, had no share in creating the other fatal diseased action? The liability of patients, who have diffuse inflammation and suppuration in either the extremities, or about the bladder, to be seized with inflam-

mation in the thoracic viscera, going on to destructive suppuration, has been noticed by our best pathologists; and I cannot get quit of the opinion that, had the above patient not undergone the operation for removal of his stone, he would in all probability not have had the fatal pleuritic attack.

Case XX. I officiated some years ago as staff-holder to a by-gone operator, in favour of a little boy three and a half years old. The perinæal incision was not above one inch in length, and although the staff was soon bared, the scalpel was used in no regular order. When the operator had applied the blunt gorget, and made its beak play in the groove of the staff, I could not get him to take the latter instrument into his own hands; so he pushed the gorget on, whilst I still continued to hold the staff; and as soon as this instrument was withdrawn, he thrust in his long forefinger, in spite of my loud call that in so tender a patient he should use the small one; after the forefinger had been thrust as deep as it would go, its entire length, there arose a doubt as to the bladder being opened; no stone could be felt, and with much flow of blood, there was no gush of urine. After much probing with finger and with forceps, all persons present became convinced that the bladder was not opened, and that the gorget and forceps, as well as the operator's forefinger, had passed between that organ and the os pubis. The staff being again introduced through the penis, it passed readily into the cavity made in the cellular texture behind the os pubis, giving to the experienced touch a different impression from that of being in the bladder, and no stone could of course be felt; in short, the bladder, as I believed on examining, was detached from all its anterior connexions, and the urethra torn or cut across about the membranous part. At length I was fortunate enough to hit the prostatic urethra, reach the bladder with the staff, and feel distinctly the stone; I passed the blunt gorget into the bladder, guided by the groove of the staff, and of course dilating the neck of the bladder, which is very practicable and even safe in a young patient; I tried to pass in my little finger, but found so narrow an opening, that it was like attempting to get it into the urethra, and the bladder was so separated from its ligamentous and other connexions with the os pubis and perinæum, that it readily retired before my finger, evading all attempts at dilatation and creating great difficulty; a pair of small dressing forceps however entered; the stone was grasped and brought down, (and with it the bladder,) to the external wound, in which change of position the bladder, I calculate, must have descended nearly two inches lower than the situation it occupied when I introduced the forceps, so great was its mobility under the employment of very gentle force. Whilst the stone was thus grasped and gentle traction used, the resisting parts at the neck of the bladder, now about on a level with the external wound, were divided with a curved bistoury; I made an exchange for the smallest pair of common lithotomy-forceps, which entered readily, and enabled me to complete the operation, taking the precaution of putting my left forefinger *in anum*, and curving it beyond the stone, thus not only preventing its retiring, but pressing it forward by this finger, whilst with the forceps I extracted. In young patients the left forefinger can be thus used very advantageously at the same time that both hands are applied to the forceps. The operation altogether occupied above half an hour.

For six hours no urine flowed; but warm fomentations being applied to the abdomen, and the lips of the wound opened, there was an escape of urine; the child obtained sleep the same evening, voiding urine, at intervals, untinged with blood. Next day the responsible operator observed that the child was "as well as could be expected," without specifying whether it was dying or doing well; the latter was the state of the case: after two days a part of the urine passed *per penem*, turbid and depositing some mucus; three days after the operation, all the urine took permanently the right course, being voided in a healthy state, in fair quantity each time, and at proper intervals; in short the wound may be said

to have united by the first intention, the child being well in less than a week, without shewing any unfavourable symptom! The calculus removed weighed just above two scruples.

In this case I feel morally certain that the gorget, slipping from the groove of the staff, passed between the bladder and os pubis, and that the operator's forefinger took the same course, not rupturing the peritonæum, (else the bowels would have protruded,) but separating it from the abdominal parietes, as high as midway between the symphysis pubis and umbilicus; the urethra was also so cut or torn, that the bladder, and with it the prostate gland, became very moveable, yielding readily before the finger in a subsequent stage of the operation, creating a remarkable difficulty, not only in finding the entrance into that viscus, but in fixing it so as to gain resistance enough for the forceps to enter it. With such injury inflicted, it is one of the fortunate anomalies in nature that neither urinary infiltration, nor cellular nor peritonæal inflammation ensued, the action excited proving just such as produced immediate reunion of all the wounded surfaces. Amongst much intercourse with books, authors and operators, I never heard but of one more singular case, the subject also a child, where the bowels protruded through an opening in the peritonæum, and the gorget touched the lobulus spigelii of the liver! though told to me seriously, I have not much reliance in the correctness of the history, notwithstanding there is something in support of it, for the patient was not stated to have recovered, and we know that when a bungling operator gets out of his depth, there is no saying where he will stop, becoming more desperate as there are more numerous spectators of his baneful exploits.

Case XXI. On the 15th of September, 1825, the late Mr. Martineau lithotomized a man, sixty-three years of age, whom I had admitted into the hospital for him five days before. When I sounded this man on first seeing him, I found that the end of the catheter came in contact with the stone at six inches and five-eighths from the orifice of the urethra; painful symptoms had been present for ten years, but the patient complained of great increase of suffering during the preceding six weeks, until which date he had kept to his work as a labourer.

I had the honour of holding the staff for Mr. Martineau, and distinctly felt the knife touch its groove at the second cut; what was further done with the scalpel was soon accomplished, but I felt convinced that the prostate gland was only partially divided, and the neck of the bladder not incised; still the blunt gorget, being very conical, readily entered, and, the staff withdrawn, the operator introduced his forefinger upon the concavity of the gorget into the bladder, forcibly dilating its neck and touching the stone. After the forceps had grasped the stone, the scalpel was twice employed to enlarge the wound downwards and outwards, after the manner this eminent lithotomist has so clearly described; still the stone, weighing an ounce and three quarters, was not extracted until great force had been applied. The patient obtained sleep the first night, but the flow of urine by the wound was scanty, less than two folded sheets being moistened in twenty-four hours. Next day the pulse were one hundred and ten, and the abdomen tender to the slightest touch in the iliac regions and just above the pubes; but no general peritonæal tenderness. To make sure that the bladder was not distended, a female catheter was introduced through the wound; an ounce only of bloody urine was drawn off, proving that there had been a scanty secretion from the kidneys. The patient was cheerful, enjoyed what he took, was allowed at his own request to lie on his right side, and took castor oil to promote an evacuation from the bowels.

When four days had elapsed, the patient retained his food, and, having a pulse just above one hundred in a minute, was thought to be doing well; but on the following afternoon, whilst sitting up out of bed for convenient purposes, (which Mr. Martineau censured and would not knowingly have allowed,) he became faint, and on being replaced in bed, soon expired.

The next day I examined the body, with the permission of Mr. Martineau, whose zeal led him to favour such investigations at the latest period of his lengthened life. I extended my incision through the abdominal parietes, from the sternum to the symphysis pubis, and when I had separated the pyramidal muscles, before opening the peritonæal cavity, an ounce or two of reddish opaque fluid escaped, which I judged to be urine and pus tinged with blood, lodging in the cellular tissue between the os pubis and bladder. There was no effusion into the cavity of the peritonæum, but this membrane was in some parts very vascular, particularly where lining the lower portion of the abdominal muscles. The cellular substance at the anterior part of the neck of the bladder, next the os pubis, was occupied by bloody purulent fluid, such as I noticed as having escaped on my making the external incision; but there was no suppuration and no effused urine in the cellular substance contiguous to the bladder in other situations, nor between the bladder and the rectum. The prostate gland had been extensively divided with the scalpel, (perhaps to above two-thirds of its depth from the anterior view,) in a direction backwards and a little outwards, and had the incision been carried on entirely through the prostate gland and neck of the bladder in this direction, it would have interfered with the left vesicula seminalis and divided the left vas deferens. The lining membrane of the bladder was very vascular. Examining the parts, some days afterwards, when minutely dissected, I could not find that the neck of the bladder had been lacerated, so it must have dilated, to allow the large calculus to be extracted, as neither it nor the posterior portion, nearly one third, of the prostate gland, had been divided in the operation. The urinary depôt behind the os publis had formed, on account of the urethra being injured in that direction, immediately behind the triangular ligament; and here was seated all the mischief causing the death of the patient, as there was neither loss of blood, nor membranous nor diffuse cellular inflammation, to account for it. The incision of the prostate gland, I should have observed, just avoided, as it ought, the orifices of the vasa deferentia.

Mr. Martineau's short paper on lithotomy, published in the *Medico-Chirurgical Transactions*, and dated January, 1821, contains a list of eighty-four patients operated on successfully, with only two exceptions. It is singular, and worthy to be noticed, that the next two patients publicly operated on by him, at the Norfolk and Norwich Hospital, both died; which is enough to abash the surgeon who should presume upon success according to his experience. Altogether that distinguished lithotomist operated on twenty-four patients at the hospital, after writing the paper alluded to, and as I saw not only these, but many of his preceding operations for stone, amounting to between forty and fifty, and in several instances, whilst assistant-surgeon to the hospital, had the honor of being staff-holder, I can speak with some grounds for confidence, upon his manner of operating.

During the many years that I witnessed Mr. Martineau's public practice in this department, he carefully selected his patients, rejecting such as were very unhealthy, or suffering from enlarged prostate gland; thus deserving more credit than in his paper he seems willing to assign to himself. No surgeon, I believe, will lithotomize with very great success, who accepts patients in all conditions and stages of the disease; a judicious selection, in which the surgeon considers the claims and chances of the patient, and not his own views for keeping up an artificial reputation for success, is the course that ought to be adhered to. Who is there that does not regret the brevity of Mr. Martineau's description of his own operation? Every surgeon who reads of his great success, must naturally desire to be acquainted with the means by which he accomplished it. A good surgeon may be made by study and education, but a first-rate operator is born possessed of some quality that makes him so; it was thus with Mr. Martineau, who was gifted with a firmness, steadiness, and manual dexterity, which the greatest experience fails to obtain for many surgeons. He cut down to the staff with so bold a stroke, as to enter its groove by a

second, or at most a third incision; and with equal quickness and precision he laid open the membranous portion of the urethra and divided a part of the prostate gland; that he seldom if ever divided the prostate gland through its entire depth, is the opinion I have formed from observation of many operations by him, and which is supported by the only dissection I had the opportunity of making and have just detailed; still enough was cut to allow the blunt gorget to enter the bladder, and then the operator invariably adopted a proceeding, which forms no unimportant part of the operation; the staff withdrawn, he was accustomed to introduce his left forefinger, (which was particularly long and large,) upon the concavity of the gorget, into the bladder, forcibly dilating the opening, and using the finger as a powerful but safe instrument for rendering the neck of the bladder ample to admit the forceps. The force and determination with which the finger was thus used, dilating if not lacerating, the remaining undivided portion of the prostate gland and the neck of the bladder, I always regarded as a peculiar and intrinsic part of Mr. Martineau's method of operating. The opening into the bladder being thus effected, partly by cutting and partly by dilating, the forceps usually entered readily, and in the use of these, rapidly carrying them to different parts of the bladder if required, or more frequently seizing at once the stone, (previously felt, and its situation ascertained, by the finger,) Mr. Martineau possessed a degree of freedom and dexterity unparalleled within my observation, and surpassed most surely by very few amongst those who have become conspicuous in this branch of operative surgery.

Case XXII. In the following case, I had the benefit of Mr. Dalrymple's assistance to hold the staff, and also in consultation upon the difficulties that arose after the operation. The little patient was three years old; his painful symptoms had existed for one year; the calculus was readily removed through the perinæal wound, my left forefinger being kept *in ano* curved beyond the calculus, (to prevent its slipping out of the blades of the forceps,) as I extracted it. Two arteries spirted blood, one of which, situated next the left ramus of the os pubis, was tied; after this so little bleeding continued, that it was deemed undesirable to keep the patient on the table till another ligature should be applied. Within two hours, urine having flowed, there was hæmorrhage in so active a form, that, in my absence, Mr. Griffin, then residing in the hospital, opened the wound and applied a second ligature successfully; some fluid blood passed from the bladder by the penis, and a large coagulum by the wound, during the struggle in applying the ligature. When I arrived, all bleeding had ceased, the child was dozing, countenance pallid, surface of the body so cold that I ordered warm flannels to the abdomen and to the lower extremities. In the evening there was sickness; pulse one hundred and twenty-four.

During the next day, the pulse varied from one hundred and forty to one hundred and sixty. On the fourth day, the pulse were less frequent, and no sickness present; in the evening, there was again a loss of an ounce or two of blood, flowing partly by the wound and partly by the penis, and I learnt that, by being accidentally pulled in the removal of the dressings, the ligatures had come away. On the following day, some blood escaped after the same manner, a coagulum bigger than a walnut passing, with great pain, by the wound, from the cavity of the bladder; in consultation it was agreed that the hæmorrhage was not sufficient to require interference, particularly as it had for some hours ceased entirely, had usually taken place slowly allowing the blood to coagulate, and was moreover furnished by a vessel deeply situated, as was proved by the blood passing into the bladder.

There was no recurrence of hæmorrhage, and the urine flowed untinged; but the pulse were not lower than one hundred and forty, often one hundred and sixty, and much pain at the neck of the bladder, and also at the end of the penis, was complained of each time the urine flowed, which was every half hour or hour, chiefly by the wound, but partly by the urethra; pus also flowed from the

wound, giving further proof of a cavity at the neck of the bladder, in which the urine lodged. I poulticed the wound and avoided all pressure to close it; this was the treatment fourteen days after the operation, about which time, the child experienced a cold chill for two successive evenings, followed by some degree of fever. On the seventeenth night, there was slight delirium with fever, and as the bowels had been active, I directed an anodyne, which had been before repeatedly administered in the course of the treatment. Early next morning it was reported to me that the child had slept all night, but at my visit I found it comatose, with convulsive twitchings of the face, eyes fixed and diverging, hands clenched, toes extended and turned inwards, and all the limbs rigid as in a state of tetanus; this condition continued, in spite of warm bath and mustard poultices, with calomel and opium internally; and the child died on the twentieth day from the operation.

The head was first inspected. The upper part of the cerebrum was noted to be very free from blood, the veins visible on its exterior being empty. A quantity of pale serum was diffused over each hemisphere of the cerebrum, under the arachnoid membrane, descending between the convolutions; viewed through the arachnoid membrane it appeared gelatinous, and as if having the opacity of thin starch, but on the arachnoid being opened here and there, the fluid escaped, in the form of a pale clear serum, to the amount of between two and three ounces. The arachnoid membrane being removed, the exposed pia mater shewed great vascularity; contrasted with this, the substance of both cerebrum and cerebellum exhibited on a section very few blood vessels. The lateral ventricles contained only between two and three drachms of fluid. At the basis of the cerebrum, there was a quantity of firm yellow lymph, particularly about the optic nerves, and upon the prominent parts of the middle lobes of the cerebrum, and near the fissura sylvii; this lymph firmly united the arachnoid membrane to the pia mater; upon the pons varolii there was also a layer of lymph, adhering less firmly to the arachnoid and pia mater. After both cerebrum and cerebellum were removed, I found, upon several parts of the basis of the cranium, particularly in the fossa for the middle lobe of the cerebrum, a layer of lymph, which could be readily scraped off, leaving the dura mater entire beneath; and it was believed, as well by some gentlemen present, as by myself, that this lymph lay beneath a delicate membrane, demonstrating the arachnoid lining of the dura mater. The abdomen presented no other circumstance calling for a remark, than thirty-two lumbrici, weighing together above two ounces, and each measuring from five to ten inches in length, occupying the hollow viscera; one was in the stomach, nearly twenty were in the duodenum and the first five inches of the jejunum, and the rest were in the remainder of this bowel or in the ileum. The bladder was empty and healthy in appearance; it is represented, with its appendages, in fig. 3 of plate xxi, where the fistulous opening leading from the neck of the bladder to the perinæum is seen to be so contracted at one part as only to admit a common probe. The dissection proved that death ensued from inflammation of the membranes of the brain, followed by effusion of lymph and serum, which induced coma and convulsions. To such cerebral affection the presence of so many intestinal worms, without doubt, mainly contributed; but it would be asserting too much to say, that the operation for removal of the calculus had nothing to do with the fatal cerebral disease, inasmuch as the fistulous perinæal opening remained, and dysury was further created by a small ulcerated cavity extending from the wound, near the bulb of the urethra, forwards upon the root of the penis, under the superficial fascia of the perinæum; this cavity was half an inch in extent, and only of a size to admit a common probe; one sees therefore no insurmountable impediment to the complete healing of the wound ultimately and a successful issue of the case, had not the cerebral disease supervened.

APPENDIX II.

TABLES SHEWING THE RESULTS OF OPERATIONS OF LITHO-CYSTOTOMY, CHIEFLY PERFORMED IN THE NORFOLK AND NORWICH HOSPITAL.

From the first opening of this institution for the reception of patients, to the present period, embracing above sixty years, all urinary calculi, removed from the human bladder by operation, whether on male or female patients, have been preserved and are now contained in a cabinet, arranged in numerical and chronological order, with an inscription to each, distinguishing the name of the operator, the name and age of the patient, the weight of the calculus removed, the day and year of the operation, and the date of the patient's discharge as cured, or of his death where the result was unfavourable. In arranging the following tables, I have availed myself of this great public record, already turned to some account by the late Dr. Marcet, in his *Essay on the Chemical History and Medical Treatment of Calculous Disorders*, and more recently by my former colleague, Dr. Yelloly, in two valuable papers published in the *Philosophical Transactions* for 1829-30. The female patients, which are intermixed with the rest, were at an early date operated on by cystotomy, and I have ascertained that it was so with the two fatal cases; but of late years, all calculi from the bladder of females, have been removed by dilatation.

TABLE I.

A list of the urinary calculi, preserved in the cabinet of the Norfolk and Norwich Hospital. The figure in the first column designates the number, those removed from females, amounting to thirty-five, being pointed out by *. The second column shews the age of each patient in years; the third marks the result, the letter *(c)* being prefixed to those discharged cured, and *(d)* to such as died; the figure corresponds to the number of days between the operation and either of those events. The last column shews the weight of each calculus.

NO.	AGE	RESULT	WT. OF CAL.	NO.	AGE	RESULT	WT. OF CAL.	NO.	AGE	RESULT	WT. OF CAL.	NO.	AGE	RESULT	WT. OF CAL.
1	40	*c* 78	6 drms.	19	38	*c* 204	1 oz. 4 dr.	37	36	*c* 95	8 ounces	55	26	*d* 18	2 oz. 4 dr.
2	10	*c* 57	2 drms.	20	61	*d* 107	2 ounces	38	4	*c* 30	3 drms.	56	3	*d* 1	1 drm.
3	14	*c* 164	7 drms.	21	4	*c* 37	2 drms.	39	30	*c* 30	4 drms.	57	57	*c* 37	6 drms.
4	5	*d* 12	8 grains	22	33	*c* 65	4 drms.	40	45	*d* 21	1 oz. 1 dr.	58	4	*c* 44	1 dr. 1 sc.
5	14	*c* 141	5 drms.	23	10	*c* 51	4 drms.	41	55	*c* 142	1 oz. 4 dr.	59	5	*c* 22	2 drms.
6	6	*c* 51	1 dr. 2 sc.	24	28	*c* 71	6 drms.	*42	10	*c* 23	7 drms.	60	3	*c* 37	3 drms.
7	14	*c* 51	7 drms.	25	15	*c* 45	3 drms.	43	8	*c* 79	4 drms.	61	10	*c* 52	2½ drms.
8	18	*c* 44	5 drms.	26	59	*d* 91	2 oz. 4 dr.	44	18	*c* 23	2 drms.	62	6	*c* 30	2 drms.
9	16	*c* 82	4 drms.	27	37	*c* 79	5 drms.	45	3	*c* 37	50 grains	63	5	*c* 121	3⅛ drms.
10	38	*c* 58	1 ounce	28	50	*c* 230	4 drms.	46	7	*c* 29	5 drms.	64	40	*c* 51	3½ drms.
*11	29	*c* 130	5 oz. 4 dr.	29	4	*c* 50	2 drms.	47	8	*d* 11	1 oz. 2 dr.	65	29	*d* 51	3 drms.
*12	5	*c* 51	3 drs.	30	67	*c* 107	1 oz. 2 dr.	48	14	*c* 51	4 drms.	66	65	*c* 37	1 oz. 6 dr.
13	18	*c* 142	3 drms.	31	68	*d* 15	5 ounces	49	14	*c* 44	3 drms.	67	19	*c* 51	1 oz. 3 dr.
14	15	*c* 170	2 drms.	32	62	*c* 91	7 drms.	50	6	*c* 54	1 drm.	68	20	*c* 51	2 dr. 2 sc.
15	12	*c* 51	2 drms.	33	3	*c* 50	42 grains	51	11	*c* 31	1 dr. 1 sc.	*69	32	*c* 47	4 drms.
16	24	*c* 37	7 drms.	34	36	*c* 114	2 oz. 8 sc.	52	7	*c* 30	3½ drms.	70	62	*c* 45	2 oz. 4 dr.
17	10	*c* 30	1 drm.	35	10	*c* 30	46 grains	53	14	*c* 51	4 drms.	71	58	*c* 51	2 dr. 1 sc.
18	45	*d* 7	1 oz. 4 dr.	36	18	*c* 50	4 drms.	54	14	*c* 72	1 oz. 2 dr.	72	3	*d* 23	1 scruple

NO.	AGE	RESULT	WT. OF CAL.
73	4	*c* 72	1 dr. 1 sc.
74	60	*c* 57	10 grains
75	50	*d* 2	4 oz. 4 dr.
76	12	*c* 58	1 oz. 2 dr.
77	15	*c* 57	1 oz. 4 dr.
78	57	*c* 43	3 drms.
79	42	*d* 2	2 oz. 4 dr.
80	12	*c* 65	4 drms.
81	6	*c* 36	½ drm.
82	9	*c* 30	6 drms.
83	3	*c* 23	2 drms.
84	5	*c* 37	1 oz. 4 dr.
85	6	*c* 30	4 drms.
86	8	*c* 65	5 drms.
87	9	*c* 44	4 drms.
88	6	*c* 72	1 drm.
89	2	*c* 44	1 scruple
90	12	*c* 86	7 drms.
91	54	*d* 25	2 oz. 2 dr.
92	50	*c* 135	4 drms.
93	47	*c* 35	1 oz. 1 dr.
94	5	*c* 49	30 grains
95	4	*c* 60	1 scruple
96	5	*c* 30	10 grains
97	56	*c* 156	2 oz. 4 dr.
98	4	*c* 37	1 dr. 1 sc.
99	54	*d* 41	3 oz. 4 dr.
100	5	*c* 58	2 scruples
101	5	*c* 58	2 scruples
102	11	*c* 51	7 drms.
103	16	*c* 44	6 drms.
104	38	*c* 72	4 ounces
105	70	*c* 65	1 oz. 4 dr.
106	59	*d* 49	2 oz. 4 dr.
107	59	*c* 40	1 oz. 1 dr.
108	47	*c* 44	4 drms.
109	7	*c* 23	2 drms.
*110	22	*c* 23	6 drms.
111	41	*c* 72	2 oz. 4 dr.
112	55	*c* 36	1 oz. 1 dr.
113	52	*c* 193	1 dr. 1 sc.
114	5	*c* 36	1 drm.
115	67	*d* 4	4 oz. 4 dr.
116	9	*c* 65	2 dr. 2 sc.
117	50	*c* 199	3 dr. 2 sc.
118	15	*c* 44	1 dr. 1 sc.
119	32	*c* 107	3 ounces
120	4	*c* 39	1 drm.
121	37	*c* 42	6 drms.
122	45	*c* 44	1 oz. 3 dr.
123	5	*c* 44	½ drm.
124	2	*c* 30	1 scruple
125	28	*c* 93	4 drms.
126	2	*c* 91	4 drms.
127	32	*c* 44	1 ounce
128	66	*d* 13	3 drms.
129	12	*d* 5	1 oz. 4 dr.
130	6	*c* 23	2½ drms.
131	5	*c* 117	3 drms.
132	10	*c* 114	6 drms.
133	9	*c* 44	3 drms.
134	12	*c* 44	1 dr. 2 sc.
135	60	*d* 21	3 ounces
136	7	*c* 44	1ounce
137	13	*c* 30	1 drm.
138	60	*d* 2	1 ounce
139	16	*c* 36	1 oz. 4 dr.
140	15	*c* 44	4 drms.
141	7	*c* 32	3 drms.
*142	33	*c* 16	6 drms.
143	43	*c* 16	4 drms.
144	48	*c* 37	3 drms.
145	5	*c* 35	1 dr. 2 sc.
146	3	*c* 23	2 drms.
147	12	*c* 37	7 drms.
148	10	*c* 37	1 oz. 3 dr.
149	3	*c* 16	½ drm.
150	7	*c* 58	½ drm.
151	5	*c* 30	2 scruples
152	3	*c* 58	1½ drm.
153	54	*c* 86	1 ounce
154	5	*c* 23	⅓ drm.
155	3	*c* 98	1 drm.
156	38	*c* 58	1 ounce
157	6	*c* 30	2 drms.
158	49	*c* 37	5 drms.
159	12	*c* 27	1 drm.
160	3	*c* 30	10 grains
161	57	*d* 3	4 ounces
162	2	*c* 16	2 scruples
163	40	*d* 11	2 ounces
164	19	*d* 19	1 ounce
165	3	*c* 23	10 grains
166	6	*c* 104	3 dr. 1 sc.
167	8	*c* 46	3 dr. 1 sc.
168	9	*c* 37	5½ drms.
169	54	*c* 89	3 ounces
170	51	*d* 12	1 oz. 2 dr.
171	8	*c* 44	1 dr. 1 sc.
172	9	*c* 65	7 drms.
173	11	*c* 50	2 ounces
174	9	*c* 37	4 drms.
175	55	*c* 100	1 oz. 4 dr.
176	61	*d* 10	2 drms.
177	18	*c* 51	4 drms.
178	15	*c* 51	1 oz. 4 dr.
179	54	*d* 6	2 drms.
180	7	*c* 44	⅓ drm.
181	33	*c* 32	1 oz. 1 dr.
182	7	*c* 32	1 drm.
183	13	*c* 103	1 oz. 2 dr.
184	26	*c* 31	1 oz. 6 dr.
*185	27	*c* 16	1 oz. 2 dr.
186	70	*d* 8	3 ounces
187	4	*c* 15	15 grains
188	29	*c* 30	1 oz. 4 dr.
189	26	*c* 44	2 drms.
190	2	*c* 30	1 dr. 2 sc.
191	6	*c* 37	2½ drms.
192	3½	*c* 37	1 drm.
193	57	*d* 6	2 ounces
194	30	*d* 1	7 ounces
195	53	*c* 37	5 drms.
196	9	*c* 100	1½ drm.
197	5	*c* 23	4 grains
198	59	*c* 65	3 drms.
199	23	*c* 37	1 oz. 2 dr.
200	9	*c* 114	1 ounce
201	40	*c* 30	5 drms.
202	7	*c* 142	4 drms.
203	13	*c* 30	1 oz. 2 dr.
204	25	*c* 51	2 ounces
205	55	*c* 30	2 oz. 2 dr.
206	22	*c* 30	2 oz. 7 dr.
207	7	*c* 37	2 drms.
208	45	*d* 17	4 drms.
209	3	*c* 51	10 grains
210	4	*c* 23	1 drm.
211	4	*c* 30	1 drm.
212	54	*c* 30	6 drms.
213	4	*c* 44	½ drm.
214	16	*d* 13	1 oz. 2 dr.
215	4	*c* 37	1 dr. 1 sc.
216	13	*c* 65	6 drms.
217	65	*c* 52	4 drms.
218	14	*c* 51	3 drms.
219	66	*c* 44	1oz. 2½dr.
220	10	*c* 44	2⅓ drms.
221	9	*c* 44	5 drms.
222	7	*c* 37	3 grains
223	2	*c* 23	2 drms.
224	26	*c* 58	1 oz 4 dr.
225	11	*c* 37	5½ drms.
226	56	*c* 79	1 oz. 1 dr.
227	11	*c* 51	5⅓ drs.
228	15	*d* 13	1 oz. 5 dr.
229	28	*c* 58	1 oz. ½ dr.
230	3	*c* 44	2 drms.
231	38	*c* 30	5 drms.
232	3	*c* 37	2 drms.
*233	3	*c* 37	3 drms.
234	7	*c* 30	3 drms.
*235	69	*c* 16	1 oz. 5 dr.
236	54	*c* 72	2 oz. 4 dr.
237	59	*c* 107	4 ounces
238	53	*d* 6	2 oz. 2 dr.
239	18	*c* 93	6 drms.
240	62	*d* 22	1 ounce
241	9	*c* 65	10 grains
242	2	*c* 16	1 dr. 1 sc.
243	30	*c* 20	2 drms.
244	5	*c* 114	4 drms.
245	49	*c* 34	4 drms.
246	5	*d* 2	30 grains
247	64	*c* 37	3 drms.
*248	13	*c* 16	2½ drms.
249	46	*c* 50	1 oz. 2 dr.
250	2½	*c* 23	2 drms.
251	45	*c* 58	3 drms.
252	61	*c* 44	1 ounce
253	15	*c* 100	1 oz. 3 dr.
254	29	*c* 93	2 oz. 6 dr.
255	4	*c* 16	4 drms.
256	70	*c* 35	2 ounces
257	7	*c* 37	2 drms.
258	2½	*c* 30	2⅔ scr.
259	6	*c* 23	1⅓ drm.
260	34	*c* 79	2 drms.
261	30	*c* 65	2⅓ drms.
262	40	*c* 170	4 oz. 6 dr.
263	6	*c* 31	2 drms.
264	4	*c* 30	3 drms.
265	7	*c* 51	3 drms.
266	4	*c* 44	1 drm.
267	9	*c* 86	10 grains
268	42	*c* 65	7 drms.
269	49	*d* 18	6 drms.
270	8	*c* 65	2⅓ drms.
271	40	*d* 5	2 oz. 4 dr.
*272	40	*c* 23	2 oz. 4 dr.
273	40	*c* 23	5 drms.
274	6	*c* 23	1 oz. 1 dr.
275	12	*c* 28	2 dr. 1 sc.
276	65	*c* 58	7 drms.
277	2	*d* 17	1 drm.
278	8	*c* 127	1 oz. 4 dr.
279	19	*c* 50	1 drm.
280	14	*d* 25	10 grains
281	13	*c* 51	6 drms.
282	5	*c* 30	2 drms.
283	12	*c* 44	5 drms.
284	7	*c* 23	3 drms.
285	4	*c* 23	1 scruple
286	54	*c* 58	1 oz. 4 dr.
287	60	*c* 57	6 drms.
288	6	*c* 37	3 drms.
289	51	*d* 6	3½ drms.
290	61	*d* 28	1 oz. 5 dr.
291	59	*d* 31	2 oz. 3 dr.
292	3	*c* 53	½ drm.
293	60	*c* 79	1 oz. 6 dr.
294	16	*c* 219	6 drms.
*295	5	*c* 16	1 dr. 2 sc.
296	8	*c* 37	3 dr. 1 sc.

NO.	AGE	RESULT	WT. OF CAL.	NO.	AGE	RESULT	WT. OF CAL.	NO.	AGE	RESULT	WT. OF CAL.	NO.	AGE	RESULT	WT. OF CAL.
297	4	*c*	37	353	5	*c*	23	409	4	*c*	30	465	3	*d*	1
298	57	*d*	40	354	24	*c*	35	410	56	*c*	30	466	67	*d*	15
299	56	*c*	72	355	5	*d*	15	411	58	*c*	72	467	3	*c*	16
300	6	*c*	58	356	7	*c*	23	412	9	*c*	23	468	48	*c*	23
301	48	*c*	58	357	60	*c*	30	413	50	*d*	4	469	21	*c*	14
302	7	*c*	37	358	6	*c*	30	414	30	*c*	44	470	5	*c*	45
303	8	*c*	30	359	53	*c*	37	415	53	*c*	23	471	60	*c*	25
304	8	*c*	15	360	66	*c*	37	416	56	*c*	44	472	75	*c*	184
305	53	*c*	33	361	66	*c*	58	417	11	*c*	30	473	16	*d*	5
306	3	*c*	16	362	42	*c*	58	418	9	*c*	37	474	8	*c*	23
307	3	*c*	30	*363	14	*c*	23	419	29	*c*	30	475	5	*c*	37
308	33	*c*	58	364	63	*c*	23	420	14	*c*	16	476	15	*c*	30
309	17	*d*	23	365	60	*d*	66	*421	38	*c*	58	477	70	*c*	51
310	7	*c*	51	366	4	*c*	23	422	33	*c*	44	478	47	*c*	28
311	6	*c*	30	367	4	*c*	23	423	22	*d*	6	479	57	*c*	51
*312	17	*c*	37	368	2⅔	*c*	15	424	60	*c*	37	480	3	*d*	1
313	10	*c*	30	369	4	*c*	16	425	4	*c*	23	481	44	*c*	23
314	14	*c*	57	370	7	*c*	22	426	17	*c*	23	482	71	*c*	58
315	2¼	*c*	37	371	17	*c*	37	427	57	*d*	2	*483	4	*c*	16
316	4	*c*	30	372	4	*d*	4	428	59	*d*	7	484	9	*c*	16
317	30	*c*	28	373	15	*c*	23	429	67	*c*	23	485	54	*d*	2
318	12	*c*	36	374	71	*d*	2	430	31	*c*	37	486	4	*c*	30
*319	19	*c*	37	*375	56	*c*	24	431	20	*c*	44	487	63	*c*	24
320	3	*c*	62	376	9	*c*	16	432	65	*c*	23	488	40	*c*	24
321	14	*c*	44	377	6	*c*	16	433	7	*c*	37	489	2	*c*	23
322	7	*d*	89	378	5	*c*	23	434	58	*c*	37	490	68	*c*	38
323	24	*c*	65	379	5	*c*	20	*435	19	*c*	16	491	33	*c*	30
324	5	*c*	51	380	75	*c*	37	*436	4	*c*	16	492	9	*d*	1
325	3½	*c*	58	381	8	*c*	23	437	5	*c*	16	493	39	*c*	23
*326	65	*c*	16	382	4	*d*	2	438	12	*c*	16	494	7	*c*	51
327	58	*c*	44	383	16	*c*	16	439	2	*c*	9	495	59	*c*	44
328	25	*d*	17	384	63	*c*	23	440	2½	*c*	16	496	7	*c*	30
329	4	*c*	37	385	3½	*c*	23	441	6	*c*	16	497	50	*d*	2
330	60	*c*	176	386	67	*d*	23	442	70	*c*	51	498	41	*c*	30
*331	24	*c*	23	*387	5	*c*	16	443	53	*d*	7	499	32	*c*	30
*332	12	*d*	1	388	6	*c*	9	444	18	*c*	16	*500	25	*c*	17
333	3½	*c*	30	389	11	*c*	44	445	6	*c*	23	501	3½	*c*	44
334	2	*c*	23	390	33	*c*	44	446	60	*c*	51	502	24	*c*	30
335	10	*c*	23	391	50	*c*	23	447	13	*c*	44	503	65	*c*	58
336	6	*c*	22	392	13	*c*	44	448	10	*c*	16	504	23	*c*	37
337	7	*c*	51	393	29	*c*	37	*449	31	*c*	30	505	69	*c*	30
338	14	*c*	37	394	7	*c*	58	450	57	*c*	30	506	6	*c*	23
339	3	*c*	23	395	60	*c*	44	451	16	*c*	24	507	10	*c*	16
340	7	*c*	37	396	30	*c*	30	452	8	*d*	1	508	60	*c*	70
341	4	*c*	23	397	10	*c*	37	453	8	*c*	23	509	2	*c*	23
342	56	*c*	58	*398	53	*d*	9	454	63	*c*	28	510	61	*c*	36
343	4	*c*	37	399	33	*c*	37	455	29	*c*	72	511	40	*c*	65
344	46	*d*	2	400	5	*d*	16	456	7	*c*	16	512	65	*c*	30
345	4	*c*	23	401	4	*c*	29	*457	36	*c*	23	513	9	*c*	37
346	6	*c*	44	402	67	*c*	23	*458	23	*c*	15	514	69	*c*	37
347	51	*d*	1	403	32	*c*	65	459	3⅓	*c*	16	515	68	*c*	30
348	25	*c*	30	404	3	*c*	16	460	62	*c*	37	516	11	*c*	30
349	5	*c*	44	405	60	*c*	29	461	55	*c*	23	517	26	*c*	44
350	11	*c*	30	406	35	*c*	30	462	50	*c*	30	518	12	*c*	37
351	38	*c*	58	407	11	*c*	30	463	64	*c*	30	519	5	*c*	30
352	54	*c*	37	408	5	*c*	37	464	9	*c*	16	520	4½	*c*	30

WT. OF CAL.
1 dr. 2 sc.
4½ drms.
6 drms.
3 drms.
4 dr.
4 dr.
2 ounces
4 dr.
6½ drs.
1 dr. 1 sc.
2 ounces
1 oz. 3 dr.
1 oz. 2 dr.
5 drms.
6 drms.
1 oz. 2½dr.
2 scruples
1 oz. 6 dr.
4 drms.
1 ounce
3 drms.
1 oz. 3 dr.
2 dr. 1 sc.
5 drms.
1 ounce
1 drm.
2 oz. 4 dr.
1 drm.
2 drms.
1 ounce
1 dr. 1 sc.
3 drms.
1 dr. 1 sc.
1 oz. 5 dr.
4½ drs.
1 dr. 1 sc.
2 drs.
1 ounce
3 drms.
3 grains
46 grains
3 drms.
5 oz. 4 dr.
2½ drms.
1 oz. 4 dr.
2 dr. 2 sc.
1 oz. 3 dr.
1 drm.
1 oz. 3 dr.
7 drms.
1 oz. 3 dr.
10 grains

WT. OF CAL.
2 scruples
1½ drm.
30 grains
1 dr. 45 gr.
1 dr. 45 gr.
3 drms.
1 oz. 1⅓ dr.
3 oz. 6 dr.
3 drms.
1 dr. 16 gr.
1 drm.
5½ drms.
3 oz. 6 dr.
3 dr. 10 gr.
4 drms.
2 dr. 2 sc.
2 oz. 1 dr.
3 drms.
5 dr. 1 sc.
4 ounces
30 grains
1 oz. 5⅓ dr.
5½ drms.
2 drms.
11 dr. 2 sc.
2⅓ drms.
2 dr. 50 gr.
5 drms.
5½ drms.
1 ounce
6 grains
7 dr. 1 sc.
2 drms.
2 drms.
24 grains
2⅓ drms.
2 oz. 5 dr.
24 grains
9 grains
6⅔ drms.
2 dr. 6 gr.
1 oz. 1 dr.
2 dr. 10 gr.
1 scruple
2 scruples
2 dr. 10 gr
4½ drms.
2 dr. 2 sc.
2 oz. 6 dr.
7⅓ drms.
1 dr. 2 sc.
4 drms.
2 dr. 2 sc
1 drm.

NO.	AGE	RESULT	WT. OF CAL.	NO.	AGE	RESULT	WT. OF CAL.	NO.	AGE	RESULT	WT. OF CAL.	NO.	AGE	RESULT	WT. OF CAL.
521	73	*c*	51 1 ounce	567	70	*d*	6 2 oz. 4 dr.	613	1⅔	*c*	23 50 grains	659	3	*d*	20 1 drm.
522	4	*c*	23 1 dr. 10 gr	568	2½	*c*	38 1½ drm.	614	18	*c*	44 6 drms.	660	54	*c*	38 48 grains
523	5	*c*	23 1 drm.	569	10	*c*	37 2 dr. 4 gr.	615	46	*c*	51 1 oz. 2½ dr.	661	4	*c*	2 dr. 51 gr.
524	58	*c*	30 2 oz. 4 dr.	570	2½	*c*	23 30 grains	616	50	*c*	23 3 drms.	662	4	*c*	16 2 dr. 45 gr.
525	6	*c*	29 1½ drm.	571	66	*c*	30 1 oz. 2 sc.	617	52	*c*	23 3½ drs.	663	10	*c*	30 3 dr. 3 gr.
526	69	*c*	77 5 ounces	572	6	*c*	30 30 grains	618	49	*c*	37 4 drms.	664	29	*c*	30 2 dr. 35 gr.
527	57	*c*	86 1 drm.	573	19	*c*	30 1 oz. 5 dr	619	16	*c*	37 4 drms.	665	51	*d*	10 6 dr. 24 gr.
528	16	*d*	29 6½ drms.	574	15	*c*	16 3½ drms.	620	2½	*c*	23 16 grains	666	52	*c*	128 1 oz. 4 dr.
529	24	*c*	23 2 dr. 10 gr.	575	40	*d*	14 3 drms.	621	18	*c*	30 4½ drms.	667	35	*c*	51 1 dr. 26 gr.
530	66	*d*	4 1 oz. 5 dr.	576	53	*c*	16 3 drms.	622	63	*d*	4 1 oz. 6 dr.	668	58	*c*	67 1 dr. 47 gr.
531	56	*c*	37 1 ounce	577	11	*c*	107 4½ drs.	623	4	*c*	23 1½ drm.	669	2	*c*	23 1 dr. 41 gr
532	5	*d*	10 4 dr. 1 sc.	*578	51	*c*	9 1½ drm.	624	47	*d*	20 4 scruples	670	4	*c*	37 40 grains
533	18	*c*	44 1 oz. 2 dr.	579	4	*c*	16 2½ drms.	625	24	*c*	44 7 drms.	671	11	*c*	30 1 dr. 55 gr.
534	3½	*c*	23 1 dr. 2½ sc.	580	58	*c*	30 4 drms.	626	65	*d*	3 6 oz. 4 dr.	*672	6	*c*	13 3 drms.
535	5	*c*	16 2½ drms.	581	64	*d*	32 1 dr. 2 sc.	627	57	*c*	42 1 oz. 1 dr	673	6	*c*	23 2 dr. 36 gr
536	4	*c*	16 2 dr. 2½ sc.	*582	47	*c*	9 2 dr. 2 sc.	628	3½	*c*	16 44 grains	674	4	*c*	30 3 dr. 51 gr.
537	16	*c*	23 1 oz. 3½ dr.	583	13	*c*	37 3 drms.	629	56	*c*	36 1 oz. 5 dr.	675	3¾	*c*	30 21 grains
538	19	*c*	30 1 oz. 2½ dr.	584	7	*c*	44 5½ drms.	630	9	*c*	43 43 grains	676	16	*c*	16 7 dr. 5 gr.
539	7	*c*	30 2 dr. 1 sc.	585	50	*c*	44 2½ drms.	631	5	*c*	16 59 grains	677	43	*c*	23 1 oz. 5 dr.
540	60	*c*	70 1 oz. 7½ dr.	586	56	*c*	27 7 drms.	*632	19	*c*	17 6 dr. 5 gr.	678	7	*c*	23 9 dr. 20 gr.
541	8	*c*	16 2 drms.	587	55	*c*	30 1 oz. 1 dr.	633	51	*c*	23 1 oz. 7 dr.	679	71	*c*	30 6 dr. 45 gr
542	69	*c*	58 1 oz. 6 dr.	588	51	*c*	37 1 dr. 2 sc.	634	3¾	*c*	16 44 grains	680	6	*c*	23 22 grains
543	14	*c*	23 4 drms.	589	5	*c*	30 1 drm.	635	24	*c*	58 10 dr. 2 sc.	681	14	*c*	23 10 grains
544	3	*c*	30 1 dr. 2 sc.	590	51	*c*	23 2½ drms.	636	60	*d*	6 1 dr. 36 gr.	682	35	*c*	16 1 oz. 7 dr.
545	16	*c*	23 1 oz. 3½ dr.	591	58	*c*	93 1 oz. 2 dr.	637	56	*c*	37 3 dr. 46 gr.	683	7	*c*	16 41 grains
546	27	*c*	23 3 drms.	592	10	*c*	16 2 drms	638	22	*c*	51 4½ drms.	684	64	*c*	23 7 dr. 1 sc.
*547	21	*c*	23 7½ drms.	593	63	*c*	58 2 ounces	639	63	*c*	58 1 oz. 6 dr.	685	2	*c*	16 6 grains
548	65	*c*	30 1 oz. 3½ dr.	594	68	*c*	30 1 oz. 7 dr.	640	4	*d*	21 1 drm.	686	6	*c*	23 2 drms.
549	9	*c*	23 2 drms.	595	52	*c*	37 1½ drm.	641	47	*c*	23 1 oz. 4 dr	687	15	*c*	23 2 drms.
550	65	*c*	30 2 dr. 10 gr.	596	40	*c*	37 6 drms.	642	64	*c*	23 2 dr. 6 gr.	688	6	*c*	35 1 oz. 8 gr.
551	2½	*c*	16 1½ drm.	597	46	*c*	33 2½ drms.	*643	3	*c*	16 ½ drm.	689	10	*c*	82 1 ounce
552	8	*c*	16 3 drms.	598	4	*c*	11 1 drm.	644	5	*c*	23 1 dr. 25 gr.	690	53	*c*	30 1 oz. 46 gr.
553	57	*c*	37 3 dr. 1 sc.	599	42	*c*	30 2 scruples	645	5	*c*	23 38 grains	691	3½	*c*	23 1 dr. 1 sc
554	8	*c*	58 2 dr. 1 sc.	600	55	*c*	44 1 oz. 4 dr.	646	61	*c*	30 1 dr. 4 gr.	692	64	*c*	30 2 dr. 50 gr.
555	69	*c*	23 2 drms.	601	11	*c*	23 5 drms.	647	64	*d*	4 3 oz. 6½ dr.	693	63	*c*	23 1 dr. 5 gr.
556	80	*c*	30 4 ounces	602	6	*c*	16 1 scruple	648	5	*c*	23 1 dr. 27 gr.	694	10	*c*	16 2 dr. 2½ sc.
557	39	*c*	37 4 dr. 2 sc.	603	65	*d*	5 2 ounces	649	4	*d*	1 12 grains	695	41	*c*	23 1 oz. 2½ dr.
558	23	*c*	30 1 oz. 1½ dr.	604	38	*c*	58 3⅓ drms.	650	45	*c*	88 45 grains	696	50	*c*	23 5 dr. 55 gr.
559	57	*c*	23 2 drms.	605	51	*d*	29 1½ drm.	651	46	*c*	37 3 dr. 28 gr.	697	3	*c*	16 25 grains
560	52	*d*	18 3 ounces	606	4	*c*	23 2 drms.	652	68	*d*	12 1 oz. 1 dr.	698	18	*c*	23 6 dr. 1 sc.
561	60	*c*	30 1 drm.	607	26	*c*	30 2 dr. 2 sc.	653	12	*c*	164 7 dr. 48 gr	699	65	*c*	51 2 ounces
562	3	*c*	16 1 scruple	608	5	*c*	23 2 dr. 2 sc	654	8	*c*	30 5 dr. 5 gr.	700	3½	*c*	23 55 grains
563	64	*c*	37 5 drms.	609	7	*c*	30 1½ drm.	655	57	*c*	23 6 dr. 5 gr.	701	32	*c*	23 2 dr. 55 gr.
564	66	*d*	20 4 drms.	610	14	*c*	44 2 ounces	656	68	*c*	37 3 dr. 26 gr.	702	4	*c*	23 36 grains
565	18	*c*	30 1 oz. 3½ dr.	611	9	*c*	30 2 ounces	657	75	*d*	8 3½ oz. 2 sc.	703	3	*c*	15 44 grains
566	62	*d*	3 3 ounces	612	4	*c*	9 1 scruple	658	18	*c*	86 5 drms.	704	6½	*c*	16 1 dr. 30 gr.

The only obstacle I have found to complete correspondence between the preceding table and the original document upon which it has been constructed is, that in five cases I have stated the age to be two years where each was designated "infant;" also in two instances, occurring fifty years ago, the patient is marked as discharged *relieved;* one patient was discharged at his own request, when erysipelas prevailed, and in No. 661, though the cure be specified, the day of the patient's discharge is omitted. The stone No. 37, weighing eight ounces, was removed fifty-eight years ago from the scrotum.

TABLE II.

THE seven hundred and four cases of litho-cystotomy, specified in table 1, are here arranged so as to shew the number of cured and of fatal cases, and the proportion of the one to the other, with a distinction of male and female.

MALE.			FEMALE.			TOTAL.		
OPERAT.	CURED	DIED	OPERAT.	CURED	DIED	OPERAT.	CURED	DIED
669	578	91	35	33	2	704	611	93
1 in $7\frac{22}{91}$			1 in $17\frac{1}{2}$			1 in $7\frac{53}{93}$		

TABLE III.

SEVEN hundred and four cases of litho-cystotomy, according to the list in the collection of calculi at the Norfolk and Norwich Hospital, and as shewn in table 1, arranged in decennial periods as to age, with a distinction of the numbers cured or ending fatally.

YEARS.	1 to 10		11 to 20		21 to 30		31 to 40		41 to 50		51 to 60		61 to 70		71 to 80		TOTAL.	
RESULT.	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D
NUMBER.	262	19	97	9	43	5	45	3	37	10	71	25	50	20	6	2	611	93
PROPOR.	1 in $14\frac{13}{19}$		1 in $11\frac{7}{9}$		1 in $9\frac{3}{5}$		1 in 16		1 in $4\frac{7}{10}$		1 in $3\frac{21}{25}$		1 in $3\frac{1}{2}$		1 in 4		1 in $7\frac{53}{93}$	

TABLE IV.

SEVEN hundred and four calculi preserved in the cabinet of the Norfolk and Norwich Hospital, arranged according to their weight in ounces, with distinction of the result of the operations performed for their removal.

1oz. & un.		1 to 2 oz.		2 to 3 oz.		3 to 4 oz.		4 to 5 oz.		5 to 6 oz.		6 to 7 oz.		7 to 8 oz.	
C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D
482	47	101	18	19	16	4	7	2	3	2	0	0	2	1*	0

* This calculus, marked No. 37 in table 1, and weighing just eight ounces, I have reason to believe was contained in the scrotum, and the case therefore cannot be regarded as a successful example of regular cystotomy.

TABLE V.

FIVE hundred and twenty-nine calculi, removed by cystotomy, weighing *one ounce or under*, taken from the first division of the preceding table, and arranged according to their weight in drachms, with the result as to the cure or death of the patient. Forty-seven out of the number being fatal cases, the proportion of deaths is *one* in about *eleven and a quarter*.

1dr. & un.		1 to 2 dr.		2 to 3 dr.		3 to 4 dr.		4 to 5 dr.		5 to 6 dr.		6 to 7 dr.		7 to 8 dr.		TOTAL.	
C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D
122	12	101	10	90	5	60	8	28	1	35	3	21	3	25	5	482	47

TABLE VI.

A List of one hundred cases of death after litho-cystotomy in males, shewing the age in years of each patient, the weight of the calculi, and the interval after the operation at which the fatal event ensued. The first ninety-one patients of this list are taken from table 1, the rest are supplied from my notes, being cases which I witnessed, or in which I operated in private practice. In eighty-four out of the hundred cases there was a solitary calculus; in seven cases there were *two* calculi, in six there were *three*, in two there were *four*, and in a single instance *five*.

NO.	AGE	WT. OF CAL.	INTERVAL.	NO.	AGE	WT. OF CAL.	INTERVAL.	NO.	AGE	WT. OF CAL.	INTERVAL.
1	5	8 grains	12 days	35	62	1 ounce	22 days	69	50	7 drms. 20 gr.	2 days
2	45	1 oz. 4 drms.	7 days	36	5	30 grains	2 days	70	16	6 drms. 30 grs.	29 days
3	61	2 ounces	107 days	37	49	6 drachms	18 days	71	66	1 oz. 5 drms.	4 days
4	59	2 oz. 4 drms.	91 days	38	40	2 oz. 4 drms.	5 days	72	5	4 drms. 20 grs.	10 days
5	68	5 ounces	15 days	39	2	1 drachm	17 days	73	52	3 ounces	18 days
6	45	1 oz. 1 drm.	21 days	40	14	10 grains	25 days	74	66	4 drachms	20 days
7	8	1 oz. 2 drms.	11 days	41	51	3 drms. 30 grs.	6 days	75	62	3 ounces	3 days
8	26	2 oz. 4 drms.	18 days	42	61	1 oz. 5 drms.	28 days	76	70	2 oz. 4 drms.	6 days
9	3	1 drachm	1 day	43	59	2 oz. 3 drms.	31 days	77	40	3 drachms	14 days
10	29	3 drachms	51 days	44	57	6 drms. 30 grs.	40 days	78	64	1 drm. 2 scruples	32 days
11	3	20 grains	23 days	45	17	2 oz. 3 drms.	23 days	79	65	2 ounces	5 days
12	50	4 oz. 4 drms.	2 days	46	7	4 drachms	89 days	80	51	1 drm. 30 grains	29 days
13	42	2 oz. 4 drms.	2 days	47	25	2 oz. 4 drms.	17 days	81	63	1 oz. 6 drms.	4 days
14	54	2 oz. 4 drms.	25 days	48	46	2 drachms	2 days	82	47	1 drm. 20 grains	20 days
15	54	3 oz. 4 drms.	41 days	49	51	2 ounces	1 day	83	65	6 oz. 4 drms.	3 days
16	59	2 oz. 4 drms.	49 days	50	5	3 drms. 30 grs.	15 days	84	60	1 drm. 36 grs.	6 days
17	67	4 oz. 4 drms.	4 days	51	60	3 ounces	66 days	85	4	1 drachm	21 days
18	66	3 drachms	13 days	52	4	1 drm. 40 grs.	4 days	86	64	3 oz. 6½ drms.	4 days
19	12	1 oz. 4 drms.	5 days	53	71	1 ounce	2 days	87	4	12 grains	7 hours
20	60	3 ounces	21 days	54	4	10 grains	2 days	88	68	1 oz. 1 drachm	12 days
21	60	1 ounce	2 days	55	67	1 oz. 6 drms.	23 days	89	75	3⅓ oz. 2 scruples	8 days
22	57	4 ounces	3 days	56	5	3 drachms	16 days	90	3	1 drachm	20 days
23	40	2 ounces	11 days	57	50	3 oz. 4 drachms	4 days	91	51	6 drms. 24 grs.	10 days
24	19	1 ounce	19 days	58	22	6 drachms	6 days	92	43	13 ounces	4 hours
25	51	1 oz. 2 drms.	12 days	59	57	4 drachms	2 days	93	68	5 drms. 20 grs.	4 days
26	61	2 drachms	10 days	60	59	3 drms. 30 grs.	7 days	94	56	6 drms. 40 grs.	13 days
27	54	2 drachms	6 days	61	53	1 oz. 2 drms.	7 days	95	65	1 oz. 2½ drms.	7 days
28	70	3 ounces	8 days	62	8	46 grains	same day	96	67	1 oz. 3½ drms.	36 hours
29	57	2 ounces	6 days	63	3	40 grains	same day	97	62	1 oz. 1½ drm.	5 days
30	30	7 ounces	same day	64	67	1 drm 30 grains	15 days	98	69	2 oz. 50 grains	37 days
31	45	4 drachms	17 days	65	16	6 drachms	5 days	99	72	5 drachms	8 days
32	16	1 oz. 2 drms.	13 days	66	3	4 drachms	1 day	100	55	3 drms. 20 grs.	7 days
33	15	1 oz. 5 drms.	13 days	67	54	4 ounces	2 days				
34	53	2 oz. 2 drms.	6 days	68	9	2 drms. 50 grs.	1 day				

TABLE VII.

The calculi in one hundred fatal cases of litho-cystotomy, as in the preceding table, arranged according to their weight in ounces.

1 oz. & un.	1 to 2 oz.	2 to 3 oz.	3 to 4 oz.	4 to 5 oz.	5 to 6 oz.	6 to 7 oz.	abv. 7 oz.
50	22	17	5	3	0	2	1

TABLE VIII.

TWELVE cases of males who underwent litho-cystotomy a second time, shewing the age *in years* of each patient at the time of his being first operated on, the interval *in months* between the first and second operation, and the weight of the calculi removed. Two of the patients, (No. 9 and 11,) died from the second operation, the rest recovered; one patient, (No 3,) had stone a third time, and was deemed unfit for operation.

No.	Age at first operation.	Interval between first and second operation.	Weight of calculi. First operation.	Second operation.	Observations.
1	15	16 months	ʒij	ʒiij	Three calculi removed at the first operation, broken into many fragments.
2	48	12 months	ʒiij	ʒv	One flat lithic-acid calculus first removed, entire; the calculus removed by the second operation is of the same composition.
3	63	32 months	ʒiv	ʒiij	One flat lithic-acid calculus at first operation, unbroken.
4	26	12 months	—	ʒiv	Weight of the first stone unknown; both rectal and perinæal fistulæ from the first operation, which were cured by the second.
5	8	17 months	ʒij ℈j	ʒivss	One entire calculus at first operation, which left a recto-urethral fistula.
6	3½	24 months	ʒiiss	ʒij ℈ij	The first calculus removed entire.
7	2½	15 months	℈iiss	ʒj	The first calculus alkaline, and broken into many fragments in the extraction.
8	3	14 months	℈j	ʒiiss	Two small calculi of oxalate of lime removed by the first operation.
9	65	130 months	ʒiss	ʒij	The first stone entire; the second was an oval stone, composed principally of lithic-acid.
10	18	8 months	ʒvj	ʒivss	The first stone was entire with an alkaline exterior.
11	46	12 months	ʒxss	ʒj ℈j	The rectum wounded in the first operation, and a recto-urethral fistula present when the second was performed.
12	7	24 months	ʒiss	℈ij	The first operation was perfect, and a firm entire globular calculus removed.

The following remarks have occurred to me in constructing and revising this table:—So far as a recurrence of the disease is connected with the first operation, a large stone leaves little subsequent danger, the most likely cases for a relapse being those, where the stone is small, and breaks in the extraction, the wound healing quickly afterwards, so as to prevent the escape of fragments. Next to fragments left in the bladder, an imperfect cure, after the first operation, from rectal or perinæal fistula remaining, may be regarded as most certain to cause a relapse. Without such circumstances being present, a second stone may form unavoidably from small calculi, previously occupying the cavities of the kidney, descending into the bladder and remaining there, or from the continuance or fresh occurrence of any deranged condition of the urinary organs capable of giving rise to a calcareous deposit. When a second concretion forms, the symptoms rarely become so severe as to induce submission to a

second operation in less than twelve months; and where several years of health elapse, as in No. 9, the return of the disease is independent of the first operation and of any morbid condition of the bladder then present. Although in a majority of the above twelve cases, the calculus removed by the first operation was firm, of regular exterior, and composed of lithic-acid, the second calculus in every case, except No. 2, 6, and 9, is triple phosphate or fusible, and without any denser nucleus of either lithic-acid or oxalate of lime, rendering it probable that they were bladder-calculi originally, arising from the morbid condition of that organ, and not formed in the kidney like primary concretions.

TABLE IX.

List of seven hundred and four cases of litho-cystotomy, as enumerated in table 1st, arranged according to the months of the year in which the operations were performed.

Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL.
40	36	69	61	68	56	58	56	59	67	79	55	704

TABLE X.

A List of one hundred fatal cases of litho-cystotomy in males, as enumerated in table 6, arranged according to the months of the year in which the operations were performed.

Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL.
6	3	11	11	9	9	5	6	9	9	13	9	100

APPENDIX III.

A CATALOGUE OF THE EXPRESS TREATISES UPON GRAVEL, STONE, AND LITHOTOMY, PUBLISHED IN DIFFERENT AGES AND COUNTRIES, AND OF ESSAYS OR NOTICES REFERRING TO THOSE SUBJECTS IN MANY PERIODICAL WORKS.

Achilles (J. F.) Disp. de frequentiori ortu Calculi Renum et Vesicæ, ejusque causis, 1764.

Adam (J. H. C.) de Materiâ Calcariâ, post diuturnam Arthritidem, per vias urinarias eductâ, Observatio singularis, 4to. Luben, 1740. (Hall. Disp. ad Morb. VII, 795.)

Adams (Wm.) Disquisition on the Stone, Gravel, and other Diseases of the Bladder, Kidneys, &c., London, 1773.

Afforty (P.) and F. Mery, Disp. ergo in Lithotomiâ, integri calculi exitum Vulneris suppurationi committere, malum, Paris, 1726.

Aitkin (John, M.D.) a Probationary Surgical Essay on Stone in the Bladder, and Lithotomy, 8vo. Edinb. 1816. (Libr. of R. C. S. L.)

Alberti (G. D.) Disp. de Arthritide Vagâ, cum Calculo et incipiente Phthisie, 4to. 1732.

Alberti (H. C.) Disp. de Calculo Renum et Vesicæ, Erford. 1690.

Alberti (M.) Disp. de usu Venæsectionis in Paroxysmo Calculi Renalis, 4to. Hallæ, 1734.

Alberti (M.) Disp. de Consensu Calculi cum Hæmorrhoidibus Externis, 4to. Hallæ, 1739.

Albini (B. S.) Index Supellectilis Anatomicæ Ravianæ, cum ejus Vitâ, necnon Methodo curandi Calculos, insimulque Instrumentorum figuris, 4to. Lugd. Bat. 1725. (Libr. of R. C. S. L.)

Albini Diss. Chirurgico-medica de variis Calculi secandi Methodis, 8vo. Lugd. Bat. 1754.

Alghisi (Toma) Trattato di Litotomia, folio, Firenze, 1707. (Libr. of R. C. S. L.)

Allan (R.) a Treatise on Lithotomy, in which are demonstrated the dangers of operating with the Gorget, and the superiority of the more simple operation with the Knife, folio, Edinb. 1808.

Allwegius (T.) Disp. de Nephritide, Leidæ, 1682.

Alpherio (H. de) Præservatio à Calculis, atque Morborum Renalium Medela, 4to. Neapoli, 1632.

Amman (P.) de Lithiasi Renum et Vesicæ, 4to. Lipsiæ, 1669.

Ampsing (J.) Disp. de Calculo, 4to. Rostoch, 1617.

Amussat (Dr.) Concretions Urinaires de l'espèce humaine classées dans le double rapport de leur volume et de leur forme, Paris, 1832.

———— Leçons sur la Lithotripsie et Lithotomie postero-pubienne, par Petit, Paris, 1834.

———— Table Synoptique de la Lithotripsie et de la Cystotomie Hypogastrique, ou mieux Postero-pubienne, Paris, 1832.

Anderson (H. W.) a Dissertation on Stone in the Bladder, 8vo. New York, 1810.

Annales Cliniques de la Société de Médecine-pratique de Montpellier, 8vo. 5 tom. 1818-9—Note sur la sortie spontanée par l'urètre d'un gros calcul urinaire chez une femme de quatre-vingt-dix ans, par M. Py, IV. 78—Observation sur la sortie spontanée de deux Calculs de l'urètre chez l'homme; et le passage d'un Calcul urinaire par l'urètre, chez un enfant de douze ans, sans aucun symptôme n'ait fait présumer sa présence dans la Vessie, IV, 82.

Annales de Chimie, ou Recueil de Mémoires

concernant la Chimie et les Arts qui en dépendent, 8vo. 108 tom. Paris, 1788-1820—Sur la nature des pierres dans la vessie, par Westrumb, VI, 26—Sur le calcul de la vessie, VII, 187—Le calcul est formé par l'acide lithique, XII, 223—Le calcul rénal est de même nature que celui de la vessie, et est formé par le depôt et le crystallization de l'acide lithique, XVI, 52—Examen d'un calcul renal d'un cheval, XVI, 96—Analyse des différentes espèces de concrétions animales et végétales, par Fourcroy, XVI, 113—Sur le calcul de la vessie, XXV, 177—Observations sur la nature du calcul de la vessie, par Brugnatelli, XXVIII, 52—Essais sur la dissolution des calculs dans les liquides acides ou alkalins, XXX, 59—De l'oxide cystique, espèce nouvelle de calcul, par Wollaston, LXXVI, 21—De quelle nature sont les calculs de la vessie des animaux carnivores, LXXXIII, 146.

Annali della Medicina Fisiologico-patologica, compilati da G. Strambio, 8vo. 3tom. Milano, 1824—Civiale, nuovo metodo col quale, senza l'operazione del taglio, si può stritolare la Pietra nella vescica, ed averne la sortita dall' uretra, I, 464—Nuovo litotomo di M. Dupuytren, (*litotomo nascosto doppio,*) 488.

Annali Universali di Medicina compilati da A. Omodei, 8vo. tom. 41-70, Milano, 1827-34.—Calcoli estratti dalla vescica senza far uso di stromento tagliente, di G. Bell, XL, 235—Civiale casi di pietra nella vescica curati col litotritore, 220—Weiss, Stromento per forare e rompere la pietra nella vescica, 229—Rigoni, lettera al prof. Pacini, dichiarante l'opinione del prof. Scarpa sull' operazione del sig. Civiale, denominata Lithotritia, XLII, 338—Storia singolare di un calcolo orinoso vescico-uretrale curato coll' estrazione, di M. Asson, 395—Quadri, Storia di singolare neurosi della vescica orinaria, XLIII, 34—Bellini, Litotomia col taglio basso-perineale, 143—Ramsay, grosso calcolo mediante la dilatazione, 187—Ballingall, Litotomia coll' alto apparecchio, 423—Tavernier, della litotritia ossia stritolatura della pietra in vescica, 447—Robinet, Apparecchio per disciogliere i calcoli nella vescica, XLIV, 172—Amussat, della litotomia coll' alto apparecchio, 574—Memoria sulla cura interna dei calcoli orinari, di H. Holland, XLVI, 451—Kern, della Litiasi, e delle malattie che vi hanno somiglianza, e della litotomia nei due sessi, 476—Balardini, Otto casi di litotomia col taglio mediano, XLVII, 238—Dupuytren e Sanson, Esperienze cliniche intorno al merito comparativo del' operazione traverso, laterale e retto-vescicale, 544—Civiale sopra la stritolatura della pietra, 546—Magendie, Relazione all' Acad. delle Scienze intorno alla litotritia, XLVIII, 593—Souberbielle, cystotomia hypogastrica, 597—Laennec, Uso dello stetoscopio alla diagnosi dei calcoli vescicali, XLIX, 285—Pecchioli, Perfezionamenti nella litotritia, 592—Risultamenti comparativi dei metodi retto-vescicale e del grando apparecchio lateralizato, LI. 428—Larrey, Osservazioni sulla litotomia, 364—Baudens, Nuova maniera di praticare la cistotomia ipogastrica, LIII, 367—Leroy d'Etoilles, Strumenti destinati a misurare in vescica il volume dei calcoli, LIV, 183—Mojon, Lettera al dott. Civiale sulla litotrizia, LV, 213—Gamberai, Osservazioni su la litotritia, LVI, 219—Civiale, Rendiconto dei calculosi curati nello spedale Necker, LVIII, 215—Wutzer, Calcoli orinari diversi nello stesso individuo, LXI, 204—Bianchessi, Nuovo litotomo per eseguire con sicurezza la litotomia, LXII, 335—Hutchinson, sulla non-frequenza della malattie calcolose tra la marineria, 603—Duse, Estrazione di un fagiuolo dalla vescica orinaria con un istromento di nuova invenzione, XLVI, 498—Laviziano, Metodo chimico-meccanico per disciogliere la pietra in vescica, 512—Castellacci, operazione di litotripsia eseguita con esito felice, 524—Bertinatti della litotrizia, LXIX, 188. (Libr. of Lond. Coll. of Physicians.)

Annals of Medicine, by And. Duncan, 8 vols, 1796-1804—Liljeblad, de usu Lapidis Suilli (a calcareous earth) in Lithiasi Renali, I, 187.

Annals of Philosophy, by T. Tompson, 8vo. 16 vols. 1812-20.—Analysis of a Calculus from

the urethra of a Hog, II, 59—Pretended Urinary Calculi, being fragments of quartz stones, IV, 76—On a new Solvent for all sorts of Urinary Concretions, by C. R. Goring, (galvanic electricity,) IV, 361—Observations on Mr. Goring's new Solvent for Calculi, by Mr. Armiger, IV, 438—On Galvanism, as a Solvent for Urinary Calculi, by Wm. Stark, V, 114—Urinary Concretion on a leaden Pipe, XIV, 394—Calculus from the bladder of a gouty person, 468—Henry on Urinary and other morbid Concretions, XV, 107—Pink sediment of Urine, 155—Singular Calculi said to be from the urinary Bladder of a Dog, 306—Prout on an urinary Calculus of lithate of ammonia, 436—A mode suggested for passing Calculi from the Bladder by the Aid of atmospheric pressure, XVI, 268.

—— New Series, 12 vols. 1821-6—Observations on Dr. Prout's estimate of the mortality from the operation of lithotomy, by Dr. Yelloly, I, 363—Dr. Prout's reply, 426—Large human Calculus, III, 392—Calculus of cystic Oxyd from a Dog, VI, 316.

Anonymous. Abhandlung über die Operationen des Steinschnitts, und über die Anwendung der dabey nöthigen Instrumente, vorzüglich der Steinsonden oder gefurchten Catheter, 8vo. Konigslutter, 1798.

—— Abhandlung über den Stein und die Gicht. Leipz. 1789.

—— An Address to the Faculty of Physic in answer to a Letter relating to Miss Stephens' Medicines for cure of the Stone, 8vo. London, 1739.

—— Analyse de la Dissertation de Morand sur la Taille au haut Appareil, 12mo. Amstel. 1729.

—— Animadversions on a late Publication, entitled "Lithotomia Douglassiana," London, 1723.

—— Cystotomia Hypogastrica, or the method of performing the High Operation, faithfully collected from the Writings of Rousset, Douglas, Cheselden, &c. 4to. London, 1724.

—— A Dissertation on the Stone in the Bladder, in which are considered the nature of the Human Calculus, the doctrine of Menstruums or the Dissolvent for the Stone; and how far they are agreeable to the Laws of Philosophy and the Animal Œconomy, 4to. London, 1738.

—— Distinct Symptoms of the Gravel and Stone, explained to the Patient, 8vo. London, 1759.

—— Dissertation on the liquid Shell, proving that it is not only a dissolvent for the Stone and Gravel, but a most efficacious Medicine in Cholic, &c. 8vo. London, 1748.

—— Estimation of the Merits of Miss Stephens' Medicaments for the Stone, London, 1739.

—— Extrait d'une Lettre à M. le Cat, sur les Opérations de la Taille faites à Dijon, 8vo. Rouen, 1763.

—— Full Examination and impartial Account of Miss Stephens' Medicines for the Stone, London, 1740.

—— Lapis Nephriticus, von dem Griesstein, seiner wundersamen Kraft. Augsb. 1636.

—— Lettre au sujet d'une Opération de la Taille faite à la Charité, par M. D. F. D. Paris 1753.

—— Lithotomus Castratus, or Mr. Cheselden's Treatise on the High Operation for the Stone, found to be the "Lithotomia Douglassiana" under a new Title, by R. H. 8vo. London, 1723 (Libr. of Lond. R. C. S.)

—— Parallèle de différentes Manières de tirer la Pierre hors de la Vessie, Paris, 1730.

—— Traité de la Taille aù haut Appareil, Paris, 1728.

—— Treatise on mineral Waters in England, with a short Discourse on Solvents of the Stone in the Kidneys and Bladder, 8vo. London, 1766.

Heilsamer Rathschlag vom Lendenstein, 8vo. Graz. 1701.

—— Treatise upon Gout and Gravel, in which the sources of each are investigated, 12mo. Lond. 1787. (Cfr. Murray Forbes.)

—— Unfehlbare Hülfsmittel wider den Nieren

und Blasenstein der J. Stephens, 4to. Fr. 1739.

—— Philosophische Medicin des Steins, der Stein und Kalk-artigen Concretionen in dem Menschlichen Körper, und der Analogen Krankheiten, Leipz. 1793.

—— Recherches sur les Remèdes capables de dissoudre la Pierre et la Gravelle, 8vo. 1775.

—— Unterricht von Steinschmerzen, nebst einigen Anmerkungen über die Kraft der Amelungischen Steintinctur, Leipz. 1715.

Antologia Medica, di V. L. Brera, 8vo. Venezia, 1834—Sulla litotrizia per Heurteloup, I, 71—Ninian-Hill, Piccoli calcoli di sola silice evacuati dall' uretra, 474—Pintaleo, Nuovo metodo per estrarre le grosse pietre dalla vescica per la via del perineo, 484—Litotrizia da tempo immemorabile praticata in Persia, 637—Litotrizia in Genova, 637—Brodie, Injezioni acidi nelle malattie calcolose, II, 178.

Antony (J. G.) Æger nephritico Dolore laborans, Giess. 1685.

Archiv für die Physiologie, von Reil und Autenrieth, 8vo. XII bde, Halle, 1796-1815—Blasensteinsäure, I, 64—Einige Bemerkungen über die Natur des Urins, von C. F. Gärtner, II, 169—Ueber die Entstehung und Natur der thierischen Concremente, insbesondere aber der Gallensteine, XI, 237.

Archives Générales de Médecine, 8vo. 27 vols. Paris, 1823-33:—Liston, Observation d'un calcul formé dans l'urètre autour d'un anneau de cuivre, I, 268—Coster, Analyse des discussions qui ont eu lieu au sujet du procédé de M. Sanson, pour extraire la pierre de la vessie par le rectum, 282—Lisfranc, nouvelle méthode de pratiquer l'opération de la taille chez la femme, 437—Home, sur un nouveau procédé pour l'extraction des calculs vésicaux par le haut appareil, II, 142—Analyse de Marcet, Essai sur l'histoire chimique des calculs, 474—Julia, Observation d'une suppression d'urine chez un sujet qui n'avait qu' un rein, et chez lequel l'orifice supérieur de l'urètre se trouva bouché par un calcul, 577.—Prevost et Dumas, sur l'emploi de la Pile dans le traitement des calculs de la vessie, III, 83—Castara, Observation de taille recto-vesicale, 225—Troussel, Extraction d'un calcul de l'urètre chez un enfant, observation suivie de quelques réflexions sur l'extraction des corps étrangers situés dans l'urètre, 382—Brugnatelli, Lithologie humaine, 438—Brisement de la pierre dans la vessie, IV, 617—Civiale, sur un procédé pour extraire la pierre de la vessie sans récourir à l'opération de la taille, V, 150—Lithotomie, 303, 310, 439, 630—Janson, Note sur la taille recto-vesicale, 630—Leroy, Réclamation au sujet des instrumens lithontripteurs, 309—Vacca-Berlinghieri sur la taille recto-vesicale, 439—Reclamation au sujet du procédé de M. Lisfranc, concernant la Taille chez la Femme, 469—Janson, Observations sur la taille latérale et recto-vesicale, VI, 83.—Taille transversale, recto-vesicale et bilatérale, 137, 139, 309, 310—Taille transversale par Dupuytren, 302—Duvergie, sur un calcul de la vessie, 466—Civiale, Suite d'observations sur le lithontripteur, VII, 5—Murat sur les calculs vésicaux, 131—Calculs vesicaux arrêtés dans l'urètre, 285, 611—Boulu, Observation de rétention d'urine causée par la présence d'un calcul dans l'urètre, IX, 22—Scarpa, Examen du troisième mémoire du prof. Vacca, relatif à la taille recto-vesicale, 396—Leroy, Exposé des divers procédés pour guérir la pierre sans avoir recours à l'opération de la taille, 415, 549—Vacca, de la lithotomie dans les deux sexes, 585—Lithotritie, X, 142, 480, 628, 640—Guérison des calculs urinaires par l'emploi du bi-carbonate de soude à l'intérieur. 305—Scarpa, Note sur la taille transversale ou bilatérale, 277—Do. de l'opération de la Taille, traduit par Ollivier, 329—Do. Lettre au prof. Vacca Berlinghieri, aù sujet du quatrième mémoire de ce dernier sur la lithotomie dans les deux sexes, 608—Brousseaud, Observation sur la méthode de Civiale destinée à broyer les calculs dans la vessie, employée avec succès sur l'auteur, 566—Observations sur les calculs vesicaux et lithotomie, 641—Machine pour la dissolution chimique des calculs dans la

vessie, 646—Thibault, Exposition d'une nouvelle méthode pour la dissolution de la pierre dans la vessie, par le cautère actuel dans l'urètre, XI, 305—Robinet, Dissolutions des calculs urinaires dans la vessie, 453—Cloquet, sur un calcul vesical chatonné, 466—Lithotomie sur six calculeux, dont cinq sont morts, 555—Bi-carbonate de Soude contre les calculs urinaires, 640—Lithotomie par Lisfranc, XII, 137—Lithontripteur de Civiale, 146—Royer-Collard, de l'opération de la taille sous-pubienne, 259—Do. de la taille recto-vesicale pratiquée par Sanson, 568—Magendie sur deux nouvelles espèces de gravelle, 469—Lithotomie par M. Roux, XIII, 193—Ollivier, sur la dilatation de l'urètre par insufflation, pratiquée anciennement en Egypte pour l'extraction des calculs vésicaux, 257—Destruction mécanique des calculs vésicaux, par Prosp. Alpinus, 259—Lithotomie, XV, 132, 468—Lithotritie, 132, 619—Civiale de la lithotritie, analysée, 156—Amussat de l'extraction des calculs de l'urètre, 466—Souberbielle sur la lithotomie, 467—Indications pour la lithotomie ou la lithotritie, XVI, 110—Lettre à M. de Kern, par Civiale, sur la lithotritie, 158—Belmas de la cystotomie sus-pubienne analysée, 159—Taille sus-pubienne XVII, 137, 308—Haricot retiré de la vessie, 140—Balardini Observations sur la taille médiane, 565—Calcul urinaire logé dans l'interieur du gland, et retiré par l'excision de cette partie, 599—Bologna, Taille recto-vésicale, XVIII, 104—Calculs des Reins, 124—Calcul avec fistule intestino-vésicale, 282—Lithotome double pour la taille bilatérale, 462—Calculs urinaires, 464—Taille sus-pubienne 452, 597, 598—Epingle, cause de phlébite, trouvée dans la Vessie, XIX, 27—Autopsie cadavérique d'un sujet opéré de la taille sus-pubienne, 143—Taille périnéale, 143—Degenération calculeuse du scrotum, 266—Amussat, Observation de taille hypo-gastrique, 288—Lithotome caché modifié par M. Rouget, 288—Taille sus-pubienne, 291—Heurteloup, Instrumens nouveaux pour la lithotritie, 299—Leroy d'Etiolles, Instrument lithotriteur perfectionné, 469—Imperforation de l'anus chez un nouveau-né opéré avec succès, formation et extraction d'un calcul alvo-urinaire, par M. Miller, 591—Calcul de la vessie, cause d'empêchement d'un accouchement, par Threlfall, 601—Sur la découverte de la taille bilatérale, 616.—Heurteloup, description de son irrigateur pour extraire les fragmens de la pierre contenue dans la vessie, XX, 140—Liston, lithotritie avec succès, 268—Expulsion d'un calcul volumineux, 289—Calcul extrait de l'urètre par M. Lisfranc, 293—Heurteloup, description d'une canule destinée a empêcher les infiltrations d'urine après la taille hypogastrique, 458—Tanchou, un nouveau cystotome, 462—Calcul en-chatonné, 604—Calcul de sept onces extrait par le haut appareil, par M. Lisfranc, 628—Lisfranc, sur la taille sus-pubienne, 608—Dudon, sur la lithodyalie, ou méthode pour broyer les calculs de la vessie en les isolant, 614—Taille lateralisée, abcès et phlébite succédant à l'opération, XXI, 141—Taille hypogastrique par un nouveau procédé, par Tanchou, 143—Calcul xantique, 145—Lithotritie, la pierre trop grosse, 271—Instrumens lithotriteurs, 454—Perfectionnemens dans la lithotritie, par Rigal, 459—Cystotomie sus-pubienne simplifiée, 603—Calcul urinaire, 612—Nouveau lithotriteur courbe, XXII, 256—Rigal sur la lithotritie, 290—Lithotriteur droit dans une sonde courbe, 413—Taille recto-vesicale, difficultés de l'extraction d'un calcul très-volumineux, 554—Yelloly sur la tendance aux maladies calculeuses XXIII, 245—Gravelle attribuée a la foudre, 258—Lithotritie par Tanchou, 300—Lithotritie connue en 1533, 445—Do. en 1519, 452—Taille recto-vesicale, 585—Civiale sur les calculs dans l'urètre, XXIV, 142—Nombreux calculs dans les vésicules séminales, XXV, 109—Calculs dans l'urètre, 271—Instrumens lithoclastiques pour écraser la pierre, 281—Lithotritie par Civiale, 288—Lithotomie par Rigal, 425—Nouveau procédé d'opérer la taille sus-pubienne, par Tanchou, 512—Algalie a obturateur mobile, pour trouver les calculs dans la vessie, 575—Longue épingle dans l'urètre, 576—Tanchou, sur la lithotritie, 591—Speculum pour

explorer par la vue le canal de l'urètre, XXVI, 125—Lithotritie, 276, 281, 594—Instrument de Jacobson pour la lithotritie, modifié, XXVII, 131—Cystotomie sus-pubienne, 260—Lithotritie, destruction dans une seule séance d'un calcul dans une vessie séparée en deux cavités, par Tanchou, 262—Lithotritie dans les cas de pierres volumineuses, 423.

Arnisæus, Diss. de Calculo Renum et Vesicæ, Helmst. 1620.

Artomius (C.) de Gravissimo Renum Affectu, Calculoso, 4to. Basil. 1618.

Assuerus (J.) Disp. de Calculo, Rostochü, 1617

Ati, della Litotomia, Bologna.

Augenius (H.) de medendis Calculosis et Exulceratis Renibus, Camerini, 1575.

Atkinson (James) Description of the New Process of perforating and destroying the Stone in the Bladder, illustrated with Cases and a Drawing of the Instrument; in a letter addressed to the Medical Board at Calcutta, 8vo. London, 1831.

Audoin de Chaignebrun, Parallèle Nouveau, ou Abrégé des différentes Méthodes de tailler, 4to. Paris, 1749.

Austin (Wm.) a Treatise on the Origin and component Parts of the Stone in the Urinary Bladder, 8vo. London, 1791.

Autenrieth (F.) Diss. Adversaria circa Lithotomiam ope Conductoris Cystotomi, et nonnullæ hujus Operationis Emendationes, 4to. Tubingæ, 1797.

Avilla (L. L. de) de quatuor Morbis, &c. Arthritide, Calculo, Podagra, et Bubonibus, 8vo. Venet. 1588.

Awsiter (J.) Treatise on the Stone and Gravel, and other Disorders arising from Obstructions in the Urinary Passages, 8vo. Lond. 1766.

Bachettoni (J. M.) Lettera al illustrissimo Sig. Sancassani Chirurgo et Litotomo, &c. 4to. Spolete, 1729.

Back (J. de) Epistola de Calculo, Lond. 1638 (Ext. apud Beverovicium.)

Barbantini (N.) di un Voluminoso Calcolo della Vescica Orinaria operato col Taglio Rettovescicale, 8vo. Lucca, 1819.

Bancal (A. P.) Manuel Pratique de la Lithotritie, ou Lettres à un Jeune Médecin sur le Broiement de la Pierre dans la Vessie, &c. 8vo. Paris, 1829.

Baseilhac (Pascal) de la Taille Latérale par la Périnée, et celle de l'Hypogastre ou Haut Appareil, 8vo. Paris, 1804.

Badeley (Joan.) de Tophis et Calculis in Vüs Urinariis, Tentamen Inaug. 8vo. Edinb. 1771.

Badham (Carolus) de Urinâ, et Calculis Urinariis, Diss. Inaug. 8vo. Edinb. 1802.

Bal (Joan.) de Nephritide, Lovan, 1783. (Coll. Diss. Lov. III, 84.)

Bauhin (J. J.) Diss. de Calculo Renum, Basil, 1662.

Baylies (H.) Inaug. Diss. ou Lithotomy, New York, 1821.

Bartholin (Gas.) de Lapide Nephritico Opusculum, 8vo. Hafuiæ, 1627.

Baudry (L.) du meilleur Procédé à employer pour l'Opération de la Taille chez la Femme, 4to. Strasbourg, 1823.

Beckman (F.) Disp. de Nephritide, Giess. 1668.

Beaumeister (J. G.) de Calculo Renum Dissertatio, 4to. Erfurt. 1675.

Beddoes' (Thos. M. D.) Observations on the Nature and Cure of Calculus, Sea-scurvy, &c. with conjectures on several other Subjects of Physiology and Pathology, 8vo. London, 1793.

Bedford (Thos.) Treatise of the sufficiency of English Medicines for the Cure of all the Diseases, Jaundice, Dropsy, Stone, &c. 8vo. Lond. 1615.

Begin (L. J.) Supplement au Traité historique et dogmatique de la Taille par F. J. Deschamps, dans lequel l'Histoire de laTaille est continuée depuis la fin du siècle dernier jusqu'à ce jour, 8vo. Paris, 1826.

Behre, Versuch einer historisch-kritischen Darstellung des Steinschnittes beim Weibe, 8vo. Heidelberg, 1827.

Belinaye (H. G.) on the Removal of Stone

from the Bladder, without the use of cutting Instruments, containing a general review of the Subject, together with a Description and Plates of the Instruments invented by Dr. Civiale and others, and details as to the mode of using them, 8vo. London, 1825.

Belmas (D.) Traité de l'Opération de la Taille sus-pubienne, ou haut Appareil, ouvrage basé sur près de cent Observations tirées de la Pratique du Dr. Souberbielle, 8vo. Paris, 1827.

Belen (Van der) Diss. de Calculo, Lovan. 1783.

Bergamius (C.) Rationalis Discussio de præcautione à Calculis Renum, et à Lapillis Vesicæ, 4to. Mediolani, 1605.

Bell (Sir Charles) Illustrations of the great Operations of Surgery, part 5th on Lithotomy, folio, London.

—— Surgical Observations, being a quarterly Report of Cases in Surgery, 8vo. parts I to V, London, 1816-18—Report on Sacs formed in the Urinary Bladder; on incysted Calculus; on Sounding for the Stone; and on the methods of performing Lithotomy when the Stone is sacculated, part IV, 444-59—Tumour in Perinæum and Extravasation of Urine from Stones obstructing the Urethra, part V, 27—Report shewing that errors in digestion and the irritation of matter in the Intestinal Canal, produce Pains in the Bladder and Urethra, which are often mistaken for the Symptoms of Stricture, and of Stone in the Bladder, part V, 64—Remarks on the Operation of Lithotomy, in which is shewn the superiority of the Operation with the Knife, in avoiding many causes of failure, in attaining the object of the operation with less violence and suffering, and therefore with less danger, part V, 115.

Bell (John) on the Operation of Lithotomy, (Vol. 2nd, Part 1st, of Principles of Surgery,) 4to. London, 1806.

Bellonius (G.) de Calculo Opusculum, Basil, 1615.

Benedictus (S.) de Lithotomia, seu Calculi Sectione Consultatio, Lugd. Bat. 1753.

Benvenuti (A.) Essai sur la Lithotritie, 8vo. Paris, 1833.

Brousseaud (M. J.) Observations pratiques sur la méthode de Civiale, employée avec succés par l'auteur, Paris, 1826.

Berthe (L.) Diss. de Lithotomiâ, 1753.

Bergen (J. C. à) Disp. de Lithiasi, Leidæ, 1765.

Bergensis (G.) de præservatione et curatione Morbi Articularis et Calculi Libellus, Antwerp, 1584.

Berlinghieri (Andrea Vaccà) Memoria sopra il Metodo di estrarre la Pietra dalla Vescica Orinaria per la via dell' Intestino Retto, 8vo. Pisa, 1821—Memoria seconda, 8vo. Pisa, 1822—Memoria terza, e Lettere sul Medesimo Soggetto dei Signori Cavarra e Giorgi, 8vo. Pisa, 1823—della Litotomia nei due Sessi, quarta Memoria, 8vo. Pisa, 1825.

—— Mémoires (1ère et 2de) sur la Méthode d'extraire la Pierre de la Vessie Urinaire par la voie de l'Intestin Rectum, traduit de l'Italien par J. C. Morin, 8vo. Genève et Paris, 1823.

Beverovicius (Joh.) de Calculo Renum et Vesicæ Liber singularis, cum Epistolis et Consultationibus Magnorum Virorum, 18mo. Lugd. Batav. 1638.

—— Exercitatio in Hippocratis Aphorismum de Calculo, et Spicilegium de Calculo, 18mo. Lugd. Batav. 1641.

Bibliothek (Chirurgische) von A. G. Richter, 12mo. 15bde. Göttingen und Gotha, 1771-97—Maret vom Steinschnitte I, 116, (from Mémoires de L'Acad. de Dijon, 1)—Hoin vom Steinschnitte, I, 120. (Ibid. I.)—Le Blanc (in Journal de Med. t. xxxix, 1773) soll man anhängende Blasenstein ausziéhen, &c. II, 38—Come von Steinschitte (from Journal de Medecine, t. xxxix) II, 44—Chemery, von einem Kinde, dem verschiedne steine aus der Blase gezogen wurde, III, 227, (from Journal de Medicine, t. xli)—Gladbach vou einem Steine in der Harnröhre, III, 368—Le Blanc von Steinschnitte (in Opérations de Chirurgie,) III, 398—Morand von Steinschnitt,

(in Vernischte chirurgische schriften) IV, 146-162—Siebold, historia lithotomiæ bisfactæ, IV, 548—Two papers on Lithot. (in Journal de Médecine, Chir. et Pharmacie, t. 47-43) IV, 703-707—Steidele, Vom Steinschitt (in Chirurgische Beobachtungen) V, 60—Molter, besondere Bemerkung von steinen in den harngängen zwischen den häuten der urinblase gefunden, V, 184—Nouvelle méthode d'extraire la pierre par dessus le Pubis, sans le secours d'aucun fluide retenu ni forcé dans la Vessie, V, 304—Henkel von steinen (in Chirurgische Beobachtungen) V, 425—Bordenave von einem Bruche der haute der Urinblase (in Hist. de l'Acad. des Sciences, 1775) V, 452—Cheston on Stone in kidneys and bladder (in his Surgical Obs.) V, 651-672—Ein seltner Blasenstein, VI, 515—Van Wy von Steinschnitt, (in Heelkundige Mengelstoffen) VII, 46—Hildebrandt, on stone in a boy eight years of age, found on dissection, VII, 692—Vicq. d'Azyr von verschiednen steinichten Concretionen in thierischen corpern, X, 327—Saucerotte vom Blasenstein (in Journal de Medecine, t. 72) XI, 409—Percy von einer sehr schweren Stein-operation (in Jour. de Med. t. 89) XI, 491—Manoury, von einem Steinschnitte an einer Weibsperson (in Journal de Med. 86) XII, 15—Opération der Boutonnière, XII, 188—A stone removed by injection of Water, XII, 350—Siebold, vom Nierenstein, XIII, 126—Desault on Stone (in 3rd vol. of Journal de Chirurgie) XIV, 21—Rush (in Transactions of Philadelphia, v. I, p. 1) on cold fomentation to the loins, bey Steinbeschwerden, XIV, 258—Hagström. von einem grossen Blasensteine (Abh. der Schwedisch. Acad.) XIV, 350—Schutzercrants, von der Ausziehung eines Nierensteins (Ibid. 12tel) XIV, 354—Virly (in Trans. of Roy. Soc. of Ed. II, 1790) on the use of caustic Alkali in Stone, XIV, 356—Sabatier uber den Steinschnitt (in Fourcroy's Médecine éclairée par les sciences physiques,) XIV, 482—Boyer von einer Steinoperation, wobei sich eine betrachtliche Blutung ereignete (in Fourcroy's Ibid. t. 3) XIV, 511—Ehrlich's account of Stone-operations seen in London, XV, 165.

Bibliothek für die Chirurgie, herausgegeben von C. J. M. Langenbeck, 12mo. 4bde. Göttingen, 1807-11—Rudtorffer, über die Operation des Blasensteins nach Pajola's Methode, II, 375—Cayol über einen Nierenstein (in Journal de Med. par Corvisart) III, 385—Geschichte eines Steinschnittes, von L. Meyer zu Zurich, IV, 150—Schreger's Chirurg. Versuche, Palliativcur der Ischuria Calculosa, IV, 377.

Bibliothek (Neue) für die Chirurgie und Ophthalmologie, herausgegeben von C. J. M. Langenbeck, 12mo. 4bde. Hannover, 1818-23—Geschichte eines vom Herausgeber glücklich verrichteten Steinschnittes, I, 429—Bemerkungen über die Gefahr des Ausziehens grosser Blasensteine, nebst Beschreibung eines Instruments zum zerbrechen grosser Steine, von H. Earle, III, 347—Bemerkungen des Herausgebers über Earle's Instrument zum zerbrechen grosser Steine in der Harnblase, III, 379—Bemerkungen über die Lithotomie von G. S. Pattison, ubers. von Dr. Barkhausen, IV, 138.

Bilger (J. F.) de Lithiasi Renum et Vesicæ, Altdorf. 1645.

Billian (G. A.) de Calculo Renum, 4to. Wittemberg. 1750. (Med. Chir. Libr.)

Blackmore (Rich. M. D.) on Dropsy, the Stone, &c. 8vo. London, 1727.

Blackrie (Alex.) a Disquisition on the Medicines that dissolve the Stone, in which Dr. Chittick's Secret is considered and discovered, 8vo. London, 1771.

Blanckert (J.) Disp. de Nephritide, Leidæ, 1741.

Blandin (P. F.) Parallèle entre la Taille et la Lithotritie, 8vo. Paris, 1834.

Blandinus (P.) Diss. de Calculo Renum, 4to. Basil. 1613.

Boerhaave (H.) Prælectiones de Calculo, 8vo. London, 1741.

Bodenstein à Carlstad (A.) Wartung der Kranken mit dem Podagra und Stein behaftet sind, 8vo. Amberg. 1611.

Bohlius (J. C.) Medicamenta Lithontriptica Anglicana revisa, Dissertatio, Regiomont, 1741.

Bordenave, Diss. "Ergo Reni Calculoso integro Ferrum non est adhibendum," Paris, 1754.

Boretius (M. E.) Specimen Medico-Chirurgicum de Operatione Alti Apparatûs, Regiomonti, 1723. (Halleri Disp. Chir. IV, 95.)

Bon (H.) Dissertation sur le Calcul Vesical chez l'Homme, 4to. Paris, 1807.

Bordegaraye (P. B. de) and Gasnier, Ergo præcavendæ Nephritidi sola Aqua, Paris, 1722.

Borrichius (O.) de Lapidum Generatione in macro- et micro-Cosmo, 12mo. Ferrara, 1687.

Boscius (J.) de Lapidibus qui nascuntur in Corpore humano, præcipuè Renibus ac Vesicâ, et ipsorum Curatione, 4to. Ingolstadt, 1680.

Bourgeois (P.) Disp. de Calculo et Remediis eum solventibus, Leid. 1744.

Bourru (E. C.) Recherches sur les Remèdes capables de dissoudre la Pierre, 8vo. Paris, 1775.

Bourdelin (H. F.) Quæstio med. chir. "An ad extrahendum e Vesicâ Calculum diversa pro re nata debeat usurpari Chirurgia?" Paris, 1734. (Halleri Disp. Chir. IV, 259.)

Bose (E. G.) Programma de Suctione, infido Calculum extrahendi Auxilio, 4to. Leipzig, 1787.

Bremond (F. de) Recueil de tous les Ecrits publiés en Angleterre sur le remède de Mslle Stephens, 2 tom. 12mo. Paris, 1743.

Brendel (Adam.) Diss. de Lapidicinâ Microcosmi, 4to. Wittemberg, 1711.

Brendel (J. G.) Programma de Calculis Vesicæ Urinariæ, Renumque, natalibus, 4to. Götting. 1751.

Braqueti (Franc.) Διατριχῆς universalis, sive de Calculo curando Liber. 4to, 1620.

Bracken (H.) Lithiasis Anglicana, or a Philosophical Enquiry into the Nature and Origin of the Stone and Gravel in Human Bodies, 8vo. London, 1739.

—— Letter to Dr. Hartley, concerning Miss Stephens' Medicines, Lond. 1739.

Bra (H. A.) Enumeratio Medicamentorum simplicium ad Calculum, 8vo. Franeker, 1589.

Brady (Saml.) de Renum et Vesicæ Calculo, 4to. Traj. ad Rh. (Libr. of R. C. S. L.)

Brand (M.) Gluckliche Steincur, oder neuerfundere Kunst den Stein in Meuschen, ohne Pein und Schmerzen, zu zermalmen und zu vertreiben, 8vo. Hamburg, 1724.

Breyer (C. L. F.) Cystotomia Lateralis Moreauiana nova eademque receptis longè præstantior, quia omnino tutior, Tubingæ, 1764. (Sandifort Thesaur. Diss. II, 485.)

Breville (P. D. de) An Educendo Calculo cæteris auteferendus Apparatus Altus? Paris, 1734, (Halleri Disp, Chir. IV, 151.)

Bringaud, Diss. "Ergo suppurato Reni calculoso, Ferrum?" Paris, 1754.

Brodholz, Diss. de Lithogenesi, Basil, 1763.

Bredhaver (J. H.) Disp. de Nephritide, Giess. 1668.

Brodie (Sir B. C. Bart.) Lectures on the Diseases of the Urinary Organs, 8vo. London, 1832.

Bromfield (Guliel.) Observationes ad Lithomiam attinentes, 4to. Florentiæ, 1761.

Brückman (P. L.) de Hydrope Pectoris à Renum Calculo oriundo, Giess. 1724.

Brugnatelli (L. V.) Litologia Umana, ossie Ricerche chimiche e mediche sulle Sostanze petrose, che si formano in diverse parti del Corpo umano, sopratutto nella Vescica orinaria, folio, Pavia, 1819.

Büchner (A. E. de) de Calculo microcosmico in genere et in specie spectato, Erford. 1726.

—— Diss. sistens Regulas necessarias circa Excretionem Calculi Renum, à Medico observandas, 4to. Halle, 1745.

—— Diss. de frequentiori Ortu Calculi Renum et Vesicæ, ejusque Causis, 4to. Halle, 1764.

—— Diss. de nexu Podagræ cum Calculo Renum et Vesicæ, 4to. Halle, 1752.

Burgowerus (J.) de necessitate Turundarum post Extractionem Calculi, 4to. 1628.

Burthog (R.) de Lithiasi et Calculo, Leid. 1662.

Buisson (S. du) Disp. de Calculo Renum ac Vesicæ, Utrecht, 1715.

Buoquat (F. J.) de variis Cautelis in Calculosorum Sectione per Hawkinisianum Methodum celebranda, Monsp, 1784. (Med. Chir. Libr.)

Busnel, Diss. de Calculo Renum, Paris, 1770.

Bussche (P. van der) Disp. Inaug. de Calculo Renum et Vesicæ, 8vo. Lugd. Bat. 1673.

Butter (Wm.) Method of Cure for the Stone, chiefly by Injections, with descriptions and delineations of the Instruments contrived for those purposes, 12mo. Edinb. 1754. (Libr. of Ed. Med. Soc.)

Cachet (C.) Apologia dogmatica in cujusdam Anonymi Scriptum de curatione Calculi, Toul. 1617.

Cadogan (W.) uber dem Stein und die Gicht, Leips. 1789.

Cam (J.) An Essay on Rheumatism, Gout, and Stone, 8vo. London, 1722.

Cambon, Lettre sur la Lithotomie, pour prouver la supériorité du Lithotome caché pour l'opération de la Taille sur tous les autres Instrumens, 12mo. Paris, 1760.

Camerarius (R. J.) Diss. de Calculis Renum et Vesicæ, 4to. Tubingœ, 1698.

Camerarius (R.) Diss. de Rationibus Embryulciæ et Lithotomiæ, Tubing. 1708.

Campana, Osservazioni sul miglior modo di prender la pietra in vescica, Venizia, 1821.

Campen (C. von) Disp. de Calculo Renum, Leid. 1668.

Camper (P.) Observationes circa Mutationes quas subeunt Calculi in Vesicâ, ex Belgico Sermone in Latinum translatæ, à J. Szombati, 4to. Pestini, 1784.

Camper (P.) Cfr. Sammlung.

Cantwell (A.) Ergo in Calculis, Ætate et temperamento Ægrotantis, Remedium Alkalino-saponaceum Anglicanum, 4to. Paris, 1742.

—— Nouvelles Expériences sur le Remède de Mad. Stephens, 12mo. Paris, 1742.

—— An Calculo Vesicæ Scalpellum semper necessarium, Paris, 1742. (Halleri Disp. Chir. IV, 393.)

Canvane (P.) on Oleum Ricini and its uses in Bilious, Calculous, and other Disorders, 8vo. London, 1769.

Carpue (J. C.) A History of the High Operation for the Stone by Incision above the Pubis, with Observations on the Advantages attending it, and an Account of the various Methods of Lithotomy from the earliest periods to the present time, 8vo. London, 1819.

Carye (Walter) The Hammer for the Stone, so named for that it sheweth the moste excellent remedie that ever was knowne for the same, 16mo. London, 1587.

Castillionæus (P. M.) Admiranda Naturalia ad Renum Calulos curandos, 4to. Mediolani, 1622.

Caspari (Carl) der Stein der Nieren, Harnblase und Gallenblase in genetischer, chemischer, diagnostischer und therapeutischer Hinsicht, nach den verschiedenen Theorien älterer und neuerer Aerzte betrachtet, nebst vollständigen Beschreibung aller alten und neuen dahin gehörigen Operations-methoden, 12mo. Leipzig, 1823.

Canisü (C.) Disp. de Calculo in genere, et præcipuè Renum et Vesicæ, Leidæ, 1757.

Cantone (V. L.) de Alcalinorum et Carbonatis Potassæ vi Lithontriptica, 1796.

Cappel (G.) Non ergo ut Renum, sic Vesicæ, Lithiasis curabilis, Paris, 1565.

Carcassonne (M.) Recherches sur le Manuel de l'Opération de la Taille sous-pubienne chez l'Homme, 4to. Montpellier, 1821.

Cartheuser, Diss. de Passione Nephriticâ, Franc. 1783.

Castera (J. P. P.) Essai sur les Accidens qui peuvent compliquer l'Opération de la Taille par l'appareil latéral, 4to. Paris, 1808.

Cat (C. N. le) Dissertation sur le dissolvant de la pierre, et en particulier sur celui de M. Stephens, 12mo. Rouen, 1739.

—— Lettre à M. Dumont lithotomiste à Bruxelles sur l'opinion de l'adhérence des pierres à la vessie, et autres erreurs ou imputations contenues dans une brochure, &c. Rouen, 1763.

—— Lettre concernant l' opération de la taille pratiquée sur les deux sexes, 12mo, Rouen, 1749.

—— Pièces concernant l'opération de la taille, 8vo. 1er recueil, Rouen, 1749—2nd recueil, Rouen, 1752—3eme recueil, Rouen, 1753.

—— Parallèle de la taille latérale, 8vo. 1766.

—— Parallèle de la taille latérale avec celle du lithotome caché, suivi de deux dissertations, 1, sur l'adhérence de la pierre, 2, sur quelques nouveaux moyens de briser la pierre, publié par Nahuys, Amsteledam, 1766.

Catani (A) il lithotomia in prattica, ov. diversamente regolare della operazioni di litotomia, Venizia, 1766.

Caulter (P.) Diss. de calculo renum et vesicæ, Helmstadt, 1656.

Cauvière (A. L. F.) Essai sur l'extraction des calculs vesicaux par l'appareil latérale, 8vo. Paris, 1802.

Cavelier (P.) Diss. de Calculo renum et vesicæ, Lugd. Bat. 1654.

Cazenberger (M.) de renum et vesicæ calculis, Lipsiæ, 1621.

Cerutti (L.) der steinscnhitt durch den mastdarm nach Sanson und Vacca Berlinghieri, aus dem franzöfischen übersetzt, und mit einigen anmerkungen versehen, 2 vols. 12mo. Leipzig, 1822-4.

Charleton (G.) Spiritus gorgoneus vi suâ saxipara exutus; sive de causis, signis et sanatione lithiaseiws Diatribe, Lugd Bat. 1650—8vo. London, 1650. (Hall. Disp. ad Med. Pract. III, 14.)

Chastanet (L.) Lettre sur la lithotomie, pour prouver la supériorité du lithotome caché pour l'opération de la taille sur tous les autres instrumens, 8vo, Paris, 1768.

—— Lettre à M. Caubon, pour servir de réfutation à un lettre de Vandergracht, chirurgien et lithotomiste, 8vo.

Chaussier, Table synoptique de la lithotomie et de la Lithomylie, folio, Paris, 1826.

Chauvot de Beauchene (Ed. Pet.) de Nephritide, Montp. 1773. (Med Chir. Libr.)

Cheselden (Wm.) A Treatise on the High Operation for the Stone, with what Rosset, le Mercier, Hildanus, and Tolet, have written on the same subject. 8vo. London, 1723.

Cheseldem (Gulielmus) Disp. de Calculo Renum, 4to. Utrecht, 1711.

Cheston's Pathological Inquiries in Surgery, 4to. Glocester, 1766—Of Abscesses of the Kidnies from a Stone in the Bladder, with a remarkable case of a diseased Bladder from a stone in the kidney, to shew the reciprocal influence the Kidney and Bladder may be supposed to have on each other, 9—Stones in the Bladder, with calculous Concretions in the Kidney, 132.

Chomel, An Sale condita lithiasis? Paris, 1704.

Chopart, Traité des Maladies des voies urinaires, avec supplement sur les pierres de la vessie et sur la lithotomie, par E. H. Felix Pascal. 2 tom. 8vo. Paris, 1830.

Christenn, Diss. de novâ lithotomiâ Guerini, Erlang. 1804.

Cilivier (L.) Traité des maladies des reins et de la vessie, contenant la cure de la pierre et de la gravelle, 8vo. Rouen, 1731.

Cincq (G.) Disp. de vesicæ et renum calculo, Leidæ, 1672.

Civiale (Dr.) Nouvelles Considérations sur la Retention d'Urine, suivie d'un Traité sur les Calculs urinaires, sur la manière d'en connaître la nature dans l'intérieur de la Vessie, et la possibilité d'en opérer la destruction sans l'opération de la Taille, 8vo. Paris, 1823.

—— de la Lithotritie ou Broiement de la Pierre dans la Vessie, 8vo. Paris, 1826.

—— Lettres sur la lithotritie—8vo. 1ere lettre, Paris, 1827—2de lettre, Paris, 1828,—3eme Lettre, sur la Lithotritie Urétrale suivie d'une Revue de l'état actuel de la Méthode lithotritique, Paris, 1831—4eme lettre sur la lithotritie, Paris, 1833.

—— Remarques sur le Rapport de la dernière Commission des Prix de Montyon, en cequi concerne la Lithotritie.

Closner (C. D.) Disp. de calculo in genere, Ingolstadt, 1759.

Clauder (C. E.) Gorgonea metamorphosis, seu

mirabilis calculi humani historia, cum præfatione, &c. Chemnitz, 1728.

Clossius (K. F.) Diss. de ductoribus cultri lithotomi sulcatis, Marburg, 1792.

—— Diss. analecta quædam ad methodum Celsianum Lithotomiæ, 4to. Tubingæ, 1792.

Cleophas (P. P.) de nephritide, Basil, 1617.

Clutius (A.) Lapidis nephritici natura, proprietates, operationes, 12mo. Rostoch. 1627.

Cnopius (P.) Diss. de calculo renum et vesicæ, Giess. 1686.

Cocchi (Ant.) De Usu Artis Anatomiæ, 2dâ ed. cui accedunt Observationes ad Lithotomiam attinentes, Auctore G. Blomfield, 4to. Florent. 1761. (Libr. of R. C. S. L.)

Cochu (Fr. Feb.) Quæs. med. chir. "An educendo calculo cæteris anteponendus altus apparatus," Paris, 1734. (Hall. Disp. Chir. IV, 151.)

Coetlogon (D.) Treatise on the Stone and Analysis of Miss Stephens' Medicine, 8vo. London, 1739.

—— Letter to the Gentlemen of the Faculty, in answer to the letter on Miss Stephens' Medicine, 8vo. London, 1739.

—— Miss Stephens' Receipt for the Stone and Gravel, with proper Observations, 8vo. London, 1739.

—— Estimation of the Merits of Miss Stephens' Medicine, &c. 8vo. London, 1739.

Cohen (M. K.) Disp. de calculo et lithontripticis, Göttingen, 1765.

—— Abhandlung von steine und die Arzneymitteln gegen denselben, aus der Lat. mit anmerk. von J. C. Niemann, 8vo. Halle, 1774.

Colberg (D.) de nephritide sive renum calculo, Altdorf, 1630.

Cole, on the Stone in the Bladder, 8vo. London.

Colot (F.) Traité de l'Opération de la Taille, avec des Observations sur la formation de la Pierre, et les suppressions d'urine, ouvrage posthume, auquel on a joint un discours sur la méthode de Franco, et sur celle de M. Rau, 12mo. Paris, 1727. (Med. Chir. Libr.)

Colutius (Franc.) de querelis nephriticis ex renum et vesicæ calculo, 4to. Romæ, 1624, (Med. Chir. Libr.)

Combaire (J. N.) Diss. sur l'extirpation des reins, 4to. Paris, 1803.

Commentaries, Medical and Philosophical, by Andrew Duncan, M. D.—1st decade, 10 vols. 8vo. 1774-85—V. Menghini Opusculum de Aquarum vi in Calculis solvendis (from Comment. Scient. Bonon. T. v,) I, 165—Stone cured in Arabia by an alkaline solution injected into the Bladder, III, 333--A review of the discovery of the solvent Powers of fixed Air on the Urinary Calculus; of the application of this remedy to other disorders of the kidneys and bladder; and of the success which has attended the use of it, V, 442—Lanphier Diss. Inaug. de Calculo Renum et Vesicæ, VI, 50—Fatal obstruction to the Secretion of Urine from Calculi in the Ureters, by Dr. John Clarke, 204—2nd decade, 10 vols. 1786-95: Remarks on formation of Gravel, in reply to Murray Forbes, by A. P. Wilson, IX, 390.

Communications, (Medical) 8vo. 2 vols. Lond. 1784-90—An account of a fatal vomiting apparently brought on by a disease of the kidneys, by W. Keir, I, 127—An account of a tumour, supposed to have been a diseased kidney, by H. Fearon, 416.

Côme (Frère) Recueil des pièces importantes sur l'opération de la taille faite par le lithotome caché; avec un mémoire concernant la retention d'urine, causée par l'embarrass du canal de l'urèthre, 12mo. Paris, 1751.

—— Suite du Recueil de toutes les Pièces qui ont été publiées au sujet du lithotome caché, 12mo. Paris, 1751.

—— Additions à la suite du recueil de toutes les pièces, qui ont été publiées au sujet du lithotome caché, 12mo. Paris, 1753.

—— Nouvelle méthode d'extraire la pierre de la vessie urinaire, par dessus le pubis, sans le secours d'aucun fluide retenu ni forcé dans la vessie; suivie de l'analyse des expérien-

ces de l'Acad. Roy. de Chir. de Paris sur l'extraction de la pierre par dessous le pubis, 8vo. Bruselles and Paris, 1779.

—— Réponse à Mons. Levacher sur la lithotomie, 12mo. Paris, 1756.

Côme (Frère) Cfr. Sammlung, also Cheselden.

Conring (H.) Diss. de Calculo Renum et Vesicæ, 4to. Helmstaedt, 1656.

Coopman (Geo.) Neurologia, et Observatio de Calculo ex Urethrâ sponte elapso, post exsiccationem uncias 5 et drachmas $1\frac{1}{2}$ pendente, 8vo. Franeq. 1795. (Med. Chir. Libr.)

Cordus (E.) Libellus de sudore anglico, calculo et peste, 4to. Marburg, 1529.

Cova (Ant. Mar.) de renum calculo, ejusdemque cum aliis morbis similitudine, 8vo. Pavia, 1790. (Rœmer. Diss. Med. Ital.)

Cousemaker (B.) de Calculo renum et vesicæ, Leidæ, 1648.

Cousinot, Disp. ergo ut suppurato reni, sic calculoso, ferrum? Paris, 1622.

Cousinot et Bourdelot, Disp. non ergo calculus in rene aut vesicâ aliquo liquore solvi potest, Paris, 1640.

Craanen (J.) Disp. de calculo renum et vesicæ, Lugd. Bat. 1676.

Cramer (J. A.) Disp. de nephralgiâ, Basil. 1697.

Crause de Mellingen (R. G.) Diss. de calculo renum et vesicæ, 4to. Jenæ, 1689.

Cregut (J.) Disp. de calculorum in corpore humano reperiendorum generatione, Basil. 1730.

Crellius (L. C.) portentosus calculus in rene G. F. Seligman repertus, elegiaco carmine descriptus, 4to. Lipsiæ, 1770.

Crüger, Diss. de calculo renum, Franequer, 1708.

Cuno (J. C.) Diss. de Calculo, 4to. Bale, 1614.

Cyprianus (A.) de cystotomiâ hypogastricâ, 4to. London, 1724.

Damourette (M.) Thèse sur la taille sus-pubienne, Paris, 1824.

Davids, de calculis cysticis et hepaticis, 4to. Leidæ, 1734.

Dease (W.) on Hydrocele, with a comparative view of the different methods of cutting for the Stone, and remarks on the medicines generally exhibited as Solvents; a new edition, with sketch of the Author's Life, 8vo. London, 1798. (Med. Chir. Libr.)

Deidier (A.) Diss. sur la formation de la pierre, sur les causes de la dureté, mollesse et fluidité des corps, 12mo. Paris, 1738.

Dellattre (P. C.) Quelques mots sur le broiement de la Pierre dans la Vessie par des procédés mécaniques, Paris, 1825.

Denys (Jacobus) Observationes chirurgicæ de calculo renum, vesicæ, urethræ, lithotomiâ et vesicæ punctură; in quibus lithotomiæ methodum, qnam celeberrimus J. J. Rau exercuit, tutissimam et felicissimam omnium huc usque inventarum methodorum esse, variis experimentis et rationibus probat, 8vo. Lugd. Bat. 1731.

Depré, Diss. de calculo microcosmico in genere et in specie spectato, Erford. 1726.

Deschamps (J. F. L.) Traité historique et dogmatique de l'opération de la taille, 4 tom. 8vo. Paris, 1796: avec un supplément, dans lequel l'histoire de la taille est continuée, depuis la fin du siècle dernier jusqu' à ce jour, par L. J. Bégin, 8vo. Paris, 1826.

Desault (Pierre) Dissertation sur la pierre des reins et de la vessie, avec une méthode simple et facile pour la résoudre sans endommager les organes de l'urine, 12mo. Paris, 1736.

Desault (P. J.) Thesis de calculo vesicæ urinariæ, eoque extrahendo, prævià sectione, ope instrumenti Hawkensiani emendati, Paris, 1776. (Cfr. Sammlung.)

Desault's Parisian Chirurgical Journal, trans. by R. Gosling, 8vo. 2 vols. 1794—Extraction of a Stone stopt at that part of the bladder where the ureter is inserted, by M. Desault, I, 33—Case of a patient cut for the Stone, when none existed, the symptoms which deceived the operator, and the appearance of the parts on dissection, II, 125—Observations on Calculi in the Bladder, 385—Symptoms of the Existence of a Stone in the Bladder, 387.

Detharding (G.) Disp. de calculis microcosmi, 4to. Altdorf. 1653.

—— Prog. de appellatione incongruâ calculi in corpore humano, Rostoch. 1729.

—— Disp. de Calculo Vesicæ friabili, 4to. Rostoch. 1729. (Halleri Disp. Chir. IV, 355.)

Diaz (F.) Tratado de todas las enfermidades de los rinnones y vesica, Madrid, 1588. (Vigil. von Creutzenfield Bibl. Chir. I, 430.)

Dicelius (J. S.) Hippocratis Aphorismi sex de calculo renum et vesicæ, 4to. Jenæ, 1670.

Dicter (J.) de Nephritide, Basil. 1601.

Dietrich (G. S.) Obs. quædam rariores de calculis in corpore humano inventis, 8vo. Halæ, 1778. (Med. Chir. Libr.)

Dobson (M.) Medical commentary on fixed air, containing its use in stone and gravel, and the prevalence of stone in cyder-counties, Chester, 1779—Third edition, with an appendix on the efficacy of the solution of fixed alkaline salts saturated with fixible air, in the stone and gravel, by Wm. Falconer, 8vo. London, 1787.

Doebal (J. J.) Diss. de Lithiasi renum, Leidæ, 1664

Doering, Epistola de calculo renum ejusque sectione, 4to. Ulm. 1628.

Dorsey (J. S.) Thesis on the powers of the gastric liquor as a solvent of urinary calculi, 8vo. Philadelphia, 1802. (Med. Chir. Libr.)

Donnel (J. M.) Diss. de Calculo, 8vo. Edinburgh, 1755.

Doringius (M.) Obs. de calculo renum, cum observ. chirurg. Hildani, 8vo. Hoppenheim, 1614.

Douglas (James, M.D.) History of the lateral operation; or an account of the method of *extracting a stone*, by making a wound near the great protuberance of the *os ischium*, through the common integuments and *levator ani*, into the side of the bladder, without touching the *urethra, prostate gland, vesiculæ seminales*, or any other of the urinary or seminal vessels; first attempted by *Frère Jacques* in France, and afterwards successfully performed by Professor *Rau* in Holland; with a postscript concerning the introduction and improvement of this method here in *London*, 4to. London, 1726.

—— An appendix to the history of the lateral operation for the Stone, containing Mr. Cheselden's present method of performing it, 4to. London, 1731.

—— Lateralis operationis historia, 4to. Lugd. Bat. 1728.

Douglas (John) Lithotomia Douglassiana; or a new method of cutting for the stone (by the high operation) first practised by John Douglas, Surgeon and Lithotomist to the Infirmary at Westminster; to which is added what has been written by the most judicious *Rossetus*, and the learned *Pietrus*, on the same subject, 4to. London, 1723.

—— Nouvelle manière de faire l'opération de la taille; on y a ajouté ceque le judicieux Rousset a écrit sur ce sujet, le traité de Monsr. Cheselden sur l'opération de la taille par le haut appareil, et le savante Thèse de Monsr. Pièrre, Paris, 1724. (Med. Chir. Libr.)

—— Verhandlung einer neuen methode den *appartum altum* ins werk zu sezen, 8vo. Bremen, 1729.

—— Lithotomia Douglassiana, of te un nieuwe wyze of steen snyden opgestelt in een Wertaaling, van J. Douglass en W. Cheselden: Benevens de Gedagten, van L. Heister, over Deeze wyse, warby eernuge aanmerkingen over de Wysen van Steensnyen geoffend door J. Douglass, en Raw, en een nieuw manier van brenke te snyden, Ultraject, 1726.

Dran (H. F. le) Parallèle des différentes manières de tirer la pierre hors de la vessie, 8vo. Paris, 1730.

—— Suite du parallèle des différentes manières de faire l'extraction de la pierre qui est dans la vessie urinaire, 8vo, Paris, 1756.

—— Parallel of the different methods of extracting the stone out of the bladder, trans. by Thos. Dale, 8vo. London, 1731.

—— Method of operating for the stone, extracted from the 5th edition of his operations of

Surgery, London, 1781. (Med. Chir. Libr.)

—— Vergleichung der mancherley arten den stein aus der blase zu ziehen, Berlin, 1733.

Drelincourt (C.) la Legende du gascon, ou lettre sur la méthode prétendue nouvelle de tailler de la pierre, 12mo. Paris, 1665. (Libr. of R. C. S. L.)

Drivon, de la lithotomie sus-pubienne, considérée comme méthode générale, 4to. Paris, 1824.

Dryander (Joh.) Ein nüzlich Büchlin, darinn allerley gewisse und bewährte Stük und Arzney vor die grausame Plage des Steinswehethun begriffen, 8vo. Frankf. 1538.

Dubut, de variis lithotomiæ methodis, Parisiis, 1771.

Dublin Medical and Physical Essays, 8vo. 1808—Essay on an improved method of performing the operation of Lithotomy, by R. M. Peile, I, 1.

Duchanoy, Ergo ad extrahendum calculum, dissecanda ad pubem vesica, Parisiis, 1774.

Duhaume (M.) Mémoires sur les dissolvants de la pierre, avec quelques problêmes de chymie, 4to. Paris, 1776.

Dumont et Fargeix, Disp. de Calculo urinario, Parisiis, 1776.

Dupuytren (G.) Thèse sur la Lithotomie, soutenue pour la Chaire de Médecine-opératoire, 4to. Paris. 1812.

Durand (Franc.) de lithiasi, Monsp. 1773. (Med. Chir. Libr.)

Dyck (J.) Disp. de calculo renum et vesicæ, Leidæ, 1676.

Dzondi (C. H.) de faciliori ac tutiori lithotomiæ instituendæ calculique eximendi methodo. 8vo. Halæ 1829.

Earle (James) Practical observations on the Stone, 8vo. London, 1793—2nd edition, with an appendix, containing a description of an instrument calculated to improve that operation, 8vo. London, 1796.

Eepen (A. van) Disp. de Nephritide, Leidæ, 1761.

Egan (Thos.) An Experimental Inquiry into the nature of gravelly and calculous Concretions in the human Subject, and the effects of alkaline and acid Substances on them, in and out of the Body, 4to. Dublin, 1805.

Elfers (J. M.) Disp. de Calculis, Leidæ, 1732.

Ellenberger (M.) Diss. de Calculo, 4to. Marbourg, 1603.

Emmemius (A.) Diss. de renum et vesicæ urinariæ calculo, Lipsiæ, 1606.

Engering, Diss. de lithotomiâ renum et vesicæ, 4to, Traject. ad Rhenum, 1690.

England (Wm. M. D.) Observations on the Functional Disorders of the Kidneys, which give rise to the formation of Urinary Calculi; with remarks on their frequency in the County of Norfolk, 8vo. London and Norwich, 1830.

Ephemerides Acad. Naturæ Curiosorum, 10 tom, 1754, &c.—Calculus vesicæ ex pueri scroto exulcerato protractus et fistulam ibidem inferens, Auct. D. Nebelio, I, 60—De fœmina per aliquot annos calculo renum cum insigni cruciatu interdum conflictante, Auct. J. C. Grimmio, 62—De viro calculoso, qui excrevit per urinam substantiam glandulosam membranaceam, instar vermis renalis lumbrici terrestris, 227—Vreteres utrique à calculis obturati, et arctissimé clausi, cum renum ingenti malo, in puero sex annorum, 455—Cæcitas ex calculo, per C. A. Adolphim, II, 196—De insigni calculum vesicæ rectè diagnoscendi difficultate, Auct. C. de Helurich, 138—Calculus renalis ingens, absque nephritide prævià, II, 51 Appendix—De ischuriâ ab urethræ calculo, III, 27—De ischuriâ ab inhærente in urethrâ calculo, facilè toleratâ, facilèque curatâ, 181—De calculis renum, linguæ et vesicæ rarioribus, 294—De calculosi anatome, ac singularibus renum, ureterum et vesicæ phænomenis, Auct. F. T. Lospichlerus, 305—De pernicioso remediorum nephritico-lithontripticorum abusu, indeque secuta complurium viscerum lethali corruptione, Auct. eodem, 309—Acetum scilliticum in nephritide calculosâ apprimè proficiens, Auct. G. F. Gutermanus, 336—De calculo, per abscessum in urethrâ facto, juxta scrotum, excluso, Auct.

J. Th. Brinius, 360—De frustulo candelæ cereæ, vesicæ antea immissæ, feliciter iterum extracto, F. Tgn. Lospichler, IV, 96—Calculorum uberrima, in detrimentum hominis, progenies in renibus et vesicâ, J. S. Albrecht, 153—De rarioribus renum, linguæ et vesicæ, calculis, W. H. Schneg, 364—Scriptorum de calculis enumeratio, 370—Calculus in scroto, 370—Calculus ingens renalis per plures annos absque doloribus gestatus, C. T. Trew, 539—Calculi renales in infante triginta septimanarum, 544—Calculus vesicæ cum aliis pessimis abdominis vitiis complicatus, J. P. Wahrendorf, 572—Calculus silici similis in vesicâ Olai Borrichii repertus, V, 257—Plurimorum calculorum congeries in vesicâ urinariâ, J. Treyling, 439—Calculus in rene sinistro, et plures alii in vesiculâ felleâ, ibid. 439—De calculo in vesicâ disrupto et spontè per urethram excreto, J. van Woendel, 617—Ruptura vesicæ a δυστοκία, prodeunte demum per genitalia contrito vesicæ calculo, VI, 114—De calculi vesicæ extractione cum terebrâ torculatâ, J. M. Wolff, 203—Calculus per biennium in urethrâ hærens, sectione feliciter sublatus, G. H. Kamegiesser, VII, 41—Nephritis simplex et calculosa, tam spontè aborta, quam per incongrua artificia inducta, J. S. Carl, 205 Cerevisiæ fæculenta nephritidem inducere possunt, 206—De calculis elegantissimis in vesicis bovinis repertis, J. P. Wolff, VIII, 9—Varia et decretoria urinæ vitia, J. H. Furstenan, 150—Calculus ultra viginti-octo annos in urethrâ hærens, feliciter tandem ablatus, T. G. Block, 441—De lithotamiæ Celsianæ præstantiâ et usu, Laurent. Heister, X, 54—Ex abusu baccarum juniperi, (propter signa calculi renalis,) diabetes lethalis, J. C. Acoluth, 201—De calculis vesicæ humanæ urinariæ, J. W. F. Boenneken, 408.

Escherny (David d') A treatise on the causes and symptoms of the stone, and of the chief remedies now in use to cure this distemper, 8vo. London, 1755. (Med. Chir. Libr.)

Espenmüller, Diss. de nephritide, Lipsiæ, 1790.

Essays and Observations (Medical,) revised and published by a Society in Edinburgh, 6 vols. 8vo. 1731-42—Stones in the kidney, with remarks on the operation of Nephrotomy, by J. Douglas, I, 231—A stone in the bladder formed on a needle, by A. Browne, IV, 297—The ureters obstructed by small stones, by Alex. Monro, VI, 665—An essay towards the discovery of a safe medicine for dissolving the Stone, by R. Whytt, VI, 667—The dissection of a calculous person, by the late J. Paisley, Surgeon, VI, 750—An uncommon tumor round the lower part of the bladder, by J. Mc. Gill, VI, 755.

Essays and Observations, physical and literary, published by the Philosophical Society of Edinburgh, 8vo. 3 vols. 1753-71—The history of two cases of stones lodged partly in the bladder and partly in the urethra, by Dr. Livington, III, 546.

Estrade (M. L') Mémoires sur la Manière dont se forment les Pierres dans le Corps humain, et sur les moyens de les dissoudre, 8vo. Martinico, 1790.

Ettingshausen (H.) Disp. de microcosmi lapidicinâ in renibus et vesicâ, 4to. Erford. 1695.

Eugenius (H.) de medendis calculosis et exulceratis renibus, 4to. Camerini, 1575.

Everwyn (J. W.) Disp. de λιθογενεσι in vesicâ urinariâ, Leidæ, 1758.

Evrat, de Alto Apparatu, 1789.

Eysenbarthus (J. M.) de optimâ lithotomiam administrandi ratione, 4to. Hallæ, 1713.

Eysel, de calculo renum et vesicæ, 4to. Erford, 1717.

Faber (J.) de calculis in corporis humani partibus inventis epistola, folio, 1628.

Fabricius (J.) Disp. de phthisi renali, calculo vesicæ complicatâ, Giess. 1699.

—— Diss. de calculo renum, Rostoch. 1638.

—— (P. C.) de Nephritide, 1760.

—— Diss. sistens genuinam calculi renalis genesin, Helmstadt, 1753.

Facts and Observations (Medical) by Dr. Simmons, 8vo. 8 vols. London, 1791-1800—A female catheter left in the Bladder of a Woman, and extracted by an operation similar to lithotomy, by E. Ford, I, 96—Cases of ischuria renalis in

children, by R. Willan, III, 1—Experiments on Human Calculi, by T. Lane, (from Phil. Trans.) III, 121—Observations on the pathology and mode of treatment of calculi in general, but more particularly of intestinal calculi; with a description and chemical analysis of the intestinal calculi of horses, by Wm. Gaitskell, IV, 31—Case of diseased kidney, by H. Y. Carter, VI, 85—Singular case of ischuria in a young woman, continuing for more than three years, during which time, if her urine was not drawn off with the catheter, she frequently voided it by vomiting; by J. Senter, (from Trans. of Coll. of Physicians of Philadelphia,) VI, 212—Account of a case in which a Stone, formed in one of the kidneys, was extracted through an abscess in the back, by H. Schützercrauts, (from Trans. of the Royal Acad. of Sciences at Stockholm,) VII, 285—A case of stone in the bladder, projecting into the urethra, and preventing lithotomy, because the staff could not be introduced, by W. Wickham, VIII, 126.

Faguer (Wm.) Cfr. Sammlung.

Falconer (Wm.) Disp. de Nephritide verâ, Edinb. 1766.

—— Experiments and observations on the dissolvent power of water impregnated with fixible air, 8vo. London, 1776.

—— An account of the efficacy of the *aqua mephitica alkalina* in calculous disorders, 3rd. ed. 8vo. London, 1799.

Falconet (C.) Diss. an educendo calculo, ceteris anteferendus apparatus lateralis? Parisiis, 1744. (Halleri Disp. Chir. IV, 195.)

Fantonus (L.) de usu turundarum post extractionem calculi, 4to. Basil. 1628.

Farwell (Chr.) de calculo renum et vesicæ, 4to. Lugd. Bat. 1729. (Med. Chir. Libr.)

Fasch (A. H.) Historia et curatio calculorum humanorum, 4to. Jenæ, 1676.

Faustus (H.) de calculo renum, Marburg. 1637.

Farnese (Tomaso) Esame delle osservazioni sul taglio retto-vescicale per l'estrazione della pietra dalla vescica orinaria, pubblicate dal cav. Antonio Scarpa, &c. 8vo. Milano, 1823—2da edizione, con aggiunte in risposta alle obbiezioni del Dr. Omodei, e cenni sulla quarta memoria della litotomia ne'due sessi del A. Vaccà Berlinghieri, 8vo. Milano, 1826.

Fehrius (J. H.) de calculo vesicæ, ejusque per sectionem auferendi methodo, 4to. Basil. 1716.

Fenner (C. W. H.) über Harnsteinkrankheit in pathologischer, therapeutischer, geschichtlicher und chemisch-analytischer hinsicht bearbeitet, 12mo. Eisenberg, 1821.

Ferrandus (J.) de nephrisis et lithiasis, seu de renum et vesicæ calculi definitione, causis, signis et curatione, 12mo. Parisiis, 1570. 2da ed. 1601. (Med. Chir. Libr.)

Fienus, Libri chirurgici 12, de præcipuis chirurgiæ controversiis, (caput 6, de sectione, sive extractione calculi, et quibus conveniat,) 4to. London, 1733. (Med Chir. Libr.)

Filgus (G. L.) De variis lithotomiam administrandi rationibus et præsertim Ravianæ præstantiâ, 4to. Giessæ, 1727.

Finkius (J. V.) de calculo renum et vesicæ, Basil, 1614.

Fischer (C. D.) de calculo vesicæ urinariæ in urethram impulso, et singulari encheiresi, absque sectione, exempto, Erford, 1744. (Halleri Disp. Chir. IV, 67.)

Fischer (J. A.) Diss. de renum et vesicæ calculo, 4to. Erford, 1721.

Fletcher (R.) Medico-chirurgical Notes and Illustrations, pt. I, 4to. London, 1831—On failures in lithotomy, 79—Fatal Abscess of the pelvis, from a lacerated bladder by the forceps, 82—Fatal peritonitis from a lacerated bladder, 83—Immediate death from extraordinary violence in the use of the forceps, 84—Fatal case from injuries done to the bladder in extracting the remnant of a stone, 87—Death from sounding for a stone, 89—Do. from continued violence in seeking for a small stone, 91—Death from peritonitis the effects of a lacerated bladder from violence in operation, 93—Case of peritonitis from violence in operation, from which the patient partly

recovered, though he ultimately perished of abscess of the pelvis and kidney, 95—Case of peritonitis, excited by long-continued attempts to find the stone with the staff before operation; two stones, one sacculated; a piece left in that situation safely, 101—Cystitis from sounding, hæmorrhage during operation, the bladder full of stone, 104—Second operation for stone on the foregoing patient, 105—Hæmorrhage during and after operation, 107—Sounding upon an irritable bladder, followed by abscesses, 107.

Fleisser (J.) de calculis corporis humani, Basil, 1606.

Fonseca (R. de) de remediis calculorum, qui in renibus et vesicâ gignuntur, 4to. Romæ, 1586.

Forbes (Jacobus) Diss. de urinæ calculis, 8vo. Edinb. 1803.

Forbes (Murray) A Treatise upon Gravel and Gout, in which their sources and connection are ascertained; with an examination of Dr. Austin's theory of Stone, and an Inquiry into the operation of Solvents, &c. 8vo. Lond. 1793, first published anonymously. (Med. Chir. Libr.)

Forster (M.) Beschreibung der tartar-krankheit, 8vo. 1614.

Fourcade (Raim.) de optimâ et tutissimimâ methodo, quâ in viris calculosis celebratur sectio lateralis, 8vo. Bourdeaux, 1765.

Fourcroy, La Médecine éclairée par les Sciences Physiques, 4 tom. Paris, 1791-2—Extraction d'une pierre arrêtée à l'insertion de l'urètre dans la vessie, par M. Désault, I, 198—Extrait d'une lettre de M. Ingen-Houz touchant le remède *(aqua mephitica alkalina,)* II, 124—Corps liquides étrangers tirés de la vessie et de l'urètre par un moyen très simple *(suction orale,)* 125—Observation sur un catheter laissé dans la vessie en évacuant l'urine dans un cas de renversement de l'utérus, par M. Ford, IV, 81.

Fournier de Lempdes, Lithotritie perfectionnée, sondes droites, et injections forcées, 8vo. Paris, 1829.

Franchimont (N.) Lithotomia medica, seu tractatus lithontripticus de calculo renum et vesicæ, 8vo. Pragæ, 1683. (Libr. of R. C. S. L.)

Franco (Pierre) Traité des Hernies, contenant une ample déclaration de toutes leurs espèces, et autres excellentes parties de la Chirurgie; assavoir, de la Pierre, &c. 8vo. Alton. 1561. (Med. Chir. Libr.)

Frank, Casus nephritidis calculosæ, tabe renis lethali exceptæ, Argent. 1763.

Frank (L. F.) Adversaria circa lithotomiam ope conductoris Cystotomi, 4to. Tubing. 1797.

Fredericus (J. R.) de renum et vesicæ calculo, Jenæ 1666.

Frida (J.) de renum et vesicæ calculo, Helmstadt, 1607.

Frisius (J.) de nephritide, Basil. 1621.

Gaillard (J. B.) Disp. de nephritide, Leidæ, 1694.

Garengeot (R. J. C. de) L'Opération de la taille par l'appareil latéral, ou la méthode de frère Jacques corrigée de tous ses défauts, 12mo. Paris, 1730.

Gastaldi (J. B.) Au dolori nephritico balneum? Avenion, 1715.

—— An calculosis conveniat *semen paliuri?* 12 mo. Avenion. 1720.

Gattenhof (G. M.) Diss. de calculo renum et vesicæ, 4to. Wurceb. 1748.

Gazette (The London Medical) 8vo. 14 vols. 1827-34—New lithotomy forceps, by Mr. Lynn, I, 31—High operation, by Dupuytren, 365—Breaking down calculi in the bladder, by Amussat, 453—Fatal case of lithotomy, by Mr. Green, 514—Lithotomy, by Mr. Lawrence, 519-546—Mr. B. Cooper's case of lithotomy, 539—Lithotomy by Mr. Green, 801—Seventy-two operations by lateral method and the gorget, by Dr. Dudley, of Transilvania, without the occurrence of a single fatal case, 108—Observations on lithotomy, by Barron Larrey, II, 106—Lithotomy at St. George's Hospital, 443-446—Lithotomy, by Mr. Green, 479—New method of extracting the stone from the bladder (the quadrilateral,) by Dr. Vidal, 488-520—Calculus in urethra producing retention of urine, 794—Mr. Parker on breaking

down calculi in the bladder, III, 8—Large soft urinary calculus, 29—Grainger's lecture on lithotomy, 103—New mode of extracting a stone, 161—Lithotomy, by Mr. W. J. Wickham, (the stone in a cyst,) 186—Case of lithotomy, by B. B. Cooper, 200—Remarks on preceding case, 232—Lithotomy on a child, by the same, 234—Bilateral and recto-vesical lithotomy at the Hotel Dieu, 295—Case of stone, by Mr. G. Dillon, situated at termination of ureter and projecting into the bladder so as to be felt on sounding, 388—Difficult case of lithotomy, by Mr. Key (a large stone in a boy,) 299—Dr. Yelloly on the chemical nature of urinary concretions, particularly of those contained in the collection belonging to the Norfolk and Norwich Hospital, 522—Lithotomy, by Mr. Lawrence, 526—Immense urinary calculus, by Mr. R. Hardey (wt. 27½ oz. symptoms 25 years,) 569—Vesicular calculus in a horse, extracted by the lateral operation, 601—Successful lithotrity, by Mr. Liston, 673—Observations on lithotomy, by Mr. Sampson, 704—Lithontripter found at Pompeii, 749—Calculi removed from the bladder by the urethral forceps, death, 749—Lithotomy, the calculus in a cyst anterior to the prostate, IV, 29—Different operations of lithotomy in Italy, 87—Mr. Key on prostatic calculi, 120—Remarks on tendency to calculous diseases, by Dr. Yelloly, 174-237—Pulverization of calculi in the bladder, 248—Operation for the extraction of a piece of bougie from the bladder, 254—Observations on lithotomy in a chemical lecture by Bransby B. Cooper, 275-277—Lithotomy, by Mr. Key, 286—Costello on pulverization of calculi, 306—Lithotomy, extraction of nearly a hundred calculi, 345—Remarks on Heurteloup and Costello, 364—Lithotomy à deux temps, by Mr. Lizars, 377—On the lithotritic process, 407-433—Mr. White's case of lithotrity, 462—Comparative claims of Heurteloup and Civiale, by J. R. Alcock, 464—Extraction from the bladder of a piece of twig seven inches long, and surrounded with calculous depositions, 507—Mr. Costello in answer to Mr. Alcock on lithotrity, 535—Extraction of a calculus from urethra by Leroy's pincers, 541—Baron Heurteloup on lithotrity, V, 1-32-102-138-262-465—Diseased kidney producing symptoms of stone in the bladder, 93—High operation, by Lisfranc, 123—Remarks on lithotomy, by W. Lawrence, 159—Lithotrity an English discovery, by J. Elderton, 205—Bacot on lithotrity by Mr. Costello, 239—Lithotomy by Mr. Lizars, 318—Calculus removed from the bladder of a girl, by Weiss's dilator, 477—Lithotomy, by Mr. Liston, 509—Do. by Mr. Tyrrell, 671—Removal of two calculi, one from the perinæum and one from the bladder, 672—Difficulties of lithotrity, by Dr. Weir, 752—Observations on lithotrity, by G. Burnet, VI, 312—Lithotomy, by Mr. Green, sloughing of wound and recovery, 318—Heurteloup on lithotrity, 363-457-552—Mr. Elderton on discovery of the lithontriptor, 650—Lithotomy, by Mr. Cooper, 800—Calculus in prostatic part of urethra, 2 inches 8 lines in circumference, removed by lithotomy, difficult to be felt and repeatedly overlooked in sounding, 885—Lawrence's lectures on urinary calculi and on lithotomy, 897-903-995-1000—Successful lithotrity, by Dr. Dobson, 991—Case of extensive disease of kidney and bladder, by Dr. F. Smith, VII, 138—On lithoplatomy or dilation of urethra in male as well as female, for removing calculus, by Dr. M. S. Buchanan, 331-398—Mr. Keate on lithoplatomy, 397—Brodie's Surgical Lectures on calculous diseases, VIII, 1-66-129-225-353-611-833—Mr. Fletcher on failures in Lithotomy, 605-699-790—Operation for stone, with clinical remarks, by Mr. Coulson, IX, 134—Lithotrity on M. Lisfranc, 565—Lithotrity by Heurteloup, related by A. T. S. Dodd, 634—Observations on the lateral operation of lithotomy, by R. B. Todd, 658—Further Observations by the same, 45—Lithotomy, by Mr. Keate, 206—Mr. D. O. Edwards on Baron Heurteloup's latest improvements in lithotrity, 364—Lithotomy by Mr. Adams, the Stone impacted in the neck of the bladder, 494—Lithotomy by Mr. Coulson, XI, 63—Retention of urine from a calculus impacted in

the urethra of a child, 333—Lithotrity with the percuteur, by Baron Heurteloup, 575—On vesical lithocenosis, or the art of bringing away from the bladder the fragments of stone produced by the action of lithontriptic instruments, by the same, 654—On urethral lithocenosis, by the same, 657—Clinical lecture on lithotomy, at the Middlesex Hospital, by Sir Charles Bell, 686—Lithotomy, calculus weighing 6¼ oz. successfully removed, by T. Hodson, XII, 387 Lithotomy on a child, by Mr. Earle, cystitis, 623—Dr. Elliotson on urinary sediments and calculi, 753—Do. on lithiasis, 817-19—Lithotrity, by A. T. S. Dodd, XIII, 443—Calculi in the kidney from stricture of the urethra, XIV, 430—Lithotomy by the rectum, Mr. Dawson, 453—On pink deposits of urine, by Drs. Brett and Bird, 601-751—Calculus with stricture, and disease of kidney, 620—Three cases of lithotomy, by Mr. Cæsar Hawkins, 624—Case of stone fatal, with disease of kidney, operation refused, 625—Cases of lithotrity, by A. Spilsbury, 911—Case of stone in bladder impacted behind the pubis, Mr. Robinson, 922—Catheter slipped into the female bladder, 924.

Gelher, Apparatûs alti methodus, 1807.

Gem (Richard) An account of the remedy for the stone lately published in England, 8vo. London, 1741. (Libr. of R. C. S. L.)

Geoffry (Mr.) An examination of Mrs. Stephens' Medicine for the stone, 8vo. (Libr. of R. C. S. L.)

Gerardus (B.) de præservatione et curatione morbi articularis et calculi, 8vo. Antwerp, 1564.

Gerlach (J.) de calculo renum, Altdorf, 1637.

Gesselius (T.) Calculorum ingens multitudo, vesicæ superficies crustâ lapideâ obducta, calculus perforatus, calculi admiranda magnitudo, 8vo. Lugd. Bat. 1658.

Giesler (J. F.) Disp. de calculo vesicæ, 4to. Leidæ, 1674.

Gillard (E. P.) Thèse "Quelles sont les circonstances où l'on doit pratiquer chez l'homme la taille suspubienne, ou du haut appareil? et quelle est la méthode que l'on doit préférer pour faire cette opération?" 4to. Paris, 1819.

Giornale di Fisica, Chemica, Storia Naturale, Medicina e Arti, di P. Configliachi e G. Brugnatelli, Decade 2nd, 1819, &c.—Brugnatelli, sulle sostanze animali che accompagnano ordinariamente l'ossiurico (ac. urico) ne' calcoli umani, II, 132—Litologia Umana (estratto,) II, 154—Azione dell' acido nitrico sull' acido urico, II, 501—Sedimento rosso dell' orina, III, 468.

Giorgi (G.) Lettera sopra due operazioni di litotomia, 8vo. Imola, 1822.

Girard (J.) Mémoire sur les calculs vésicaux, et sur l'opération de la taille dans le chéval, 8vo. 1823. (Libr. of R. C. S. L.)

Girardi (M.) Diss. de uva ursina, ejusque et aquæ calcis vi lithontriptica, Patavii, 1764. (Sandifort Thesaur. Diss. II, 453.)

Giraud, Observations sur quelques instrumens relatifs à la lithotomie, &c. 4to. Marseille, 1803.

Gladbach (G.) Geschichte und heilung einer sieben und zwanzigjährigeu ausserlichen krankheit, welche durch den ausenthalt eines steins von zwey loth in der harnröhre verursacht worden, 8vo. Göttingen, 1775.

Goelicke (T. O.) Disp. de optima lithotomiæ administrandæ ratione, Francof. 1713.

Gooch (Benj.) Cases and Practical Remarks in Surgery, 2 vols. 8vo. and Appendix, Norwich, 1767-73—Singular case of the stone, II, 172—Case in which 16 stones were extracted out of the urethra and bladder; and a remarkable occurrence in lithotomy, II, 174—Of stones long fixed in the urethra happily removed by a very easy method, II, 177—Remarkable polished and pointed stones passed by urethra, II, 180—A case of stone in a woman attended with some uncommon circumstances, II, 182—Concerning the use of the cutting gorget, II, 185—A stone escaping from the urethra and projecting into the rectum above the sphincter ani, App. 184.

Goodwyne (R. H.) Inaug. Diss. on lithotomy, 8vo. New York, 1810.

Grabe (M. S.) Diss. de renum calculo, 4to.

Leidæ, 1700.

Grabergii (J. E.) Diss. Med. Chir. "An dentur medicamenta quæ calculum in vesicâ imminuant?" Halle, 1734. (Halleri Disp. Chir. IV, 329.)

Grabisgadius (M.) de renum calculo, 4to. Basil, 1586.

Gravius, Diss. de calculo renum et vesicæ, Heidelb. 1583.

Greenfield (John) a compleat Treatise of the stone and gravel, comprising its origin, symptoms, best way of easing, true method of cutting, and divers remarkable histories of curing many cruelly afflicted patients; with an ample dissertation on lithontriptic or stone-breaking medicines, &c. illustrated with proper figures of the operation, and of some uncommon stones, 8vo. Lond. 1710. (Cfr. Groenevelt infrà.)

Grieve (J.) Diss. Inaug. de calculo vesicæ, Edinb. 1752. (Norwich Med. Libr.)

Grimberg (N.) Kurze beschreibung des nieren- und blasen-steins, Hafniæ, 1695.

Groenevelt (Joanne) Disp. de calculo vesicæ, Utrecht, 1670.

—— Dissertatio lithologica, variis observationibus et figuris illustrata, 8vo. London, 1684. (Same author as Greenfield.)

Grossard (J. C.) de optima et tutissima Rathomagensis professoris methodo, quâ in viris celebratur sectio lateralis, 8vo. Bourdeux, 1766.

Grossatesta (G.) Lettera ad un amico sul' apparecchio grande lateralizato, 4to. Modena, 1758.

Gruger (E. C.) Disp. de calculo renum, Franecker, 1708.

Grüling (P.) Tract. de calculo et suppressione urinæ, multis exemplis, observationibus et notis illustratus, Northus. 1661.

Gualterus, über den Stein, 8vo. Antwerp. 1517.

Guenzius (J. G.) Observationum chirurgicarum de calculum curandi viis, quas Foubert, Garengeot, Pechet, Le Dran et Le Cat, chirurgi Galli, repererunt, liber unus, 8vo. Lipsiæ, 1740. (Cfr. Sammlung.)

—— Recensio critica suarum epistolarum, quarum altera à Chirurgo anonymo, altera à Coghlano, super Fulberti calculum secandi rationem, gallicè scriptæ sunt, 4to. Lipsiæ, 1745.

Guerin (M. H.) Histoire et déscription de la taille latérale suivant la méthode perfectionnée de W. Cheselden et J. Thomson, suivie d'une méthode nouvelle pour la taille trouvée par M. Dupuytren, Paris, 1818.

Guidetti (G.) della nefrotomia e litotomia, 4to. Firenze, 1784.

Gunther (O.) de renum morbis, Helmstadt,

Guyot (A.) et Jac. du Val, "Ergo a lacte lithiasis," Paris, 1645.

Gattei, Processo di litotomia, Pesaro 1832.

Hagen (F. C.) Diss. de λιθογενέσια, Witteberg, 1702.

Hagstroem (J. O.) Genesis calculi, Upsal, 1749. (Ext. in Linnæi Amœnitat. Acad. II, 137.)

Hales (S.) An account of some experiments on Mrs. Stephens's Medicines for dissolving the Stone, 8vo. London, 1740. (Med. Chir. Libr.)

—— de Lithontriptico à J. Stephens nuper invento Diss. epistolaris, 8vo. Bath, 1751. (Watts' Biblioth. Brit.)

—— Statical Essays, with an account of some experiments on stones in the kidneys and bladder, 8vo. 2 vols. Lond. 1769. (Norwich Pub. Libr.)

Hant (S.) Disp. de lithiasi, Leidæ, 1687.

Hartenkeil, Tractatus de vesicæ urinariæ calculo, 4to. Bamb. and Wirceb. 1785.

Hammen (L. von) de herniis; accedunt de crocodilo, ac vesicæ mendaci calculo, epistolæ et responsiones, 12mo. Lugd. Bat. 1581. (Med. Chir. Libr.)

Hartley (David) A view of the present evidence for and against Mrs. Stephens's Medicines as a solvent for the stone, containing 155 cases, with some experiments and observations, 8vo. London, 1739. (Libr. of Ed. Med. Soc.)

—— Supplement to a Pamphlet entitled a view of the present evidence, &c. 8vo. London, 1740. (Med. Chir. Libr.)

—— Diss. epistolaris de lithontriptico Joannæ Stephens, 8vo. Lond. 1751. (Ploucquet, Lit. Med.)

—— Account of some experiments on Mrs. Stephens's Medicines for dissolving the stone, 8vo. London, 1746. (Watts' Bibl. Brit.)

Hartmann (P. T.) de calculis in vesiculâ semicali repertis, aliisque notatis anatomicis, Francof. ad V. 1765.

Hartman (P. E.) Prog. de acidi vitriolici virtute calculum pellente, 4to. Francof. ad V. 1778.

—— Diss. "Anti-nephritica virtus uvæ ursinæ suspecta," Francof. ad V. 1778.

Hasselenberg (F. X.) de morbis renum et vesicæ urinariæ, Mosæ Traject. 1777. (Collect. Dissert. Lovan. I, 288.)

Hasselman (D.) Disp. de hæmaturiâ nephriticâ, Leidæ, 1768.

Haupt (F. G.) Zuverlässige nachricht wie die in Engelland erfunden steinarzney præparirt und angewand muss, Königsberg, 1740.

Hauptmann, Diss. de calculo humano, Lipsiæ, 1652.

Hausmanns (J. S.) Beurtheilung der Hawkinsischen methode den blasenstein zu operiren, 4to. Braunschwick, 1781. (Ext. in Sammlung, q. v.)

Hazon (J. A.) An in calculo renum et vesicæ, pro natura calculi, ætate et temperamento ægrotantis, remedium alkalino-saponaceum Anglicum? Parisiis, 1742. (Halleri Disp. Chir. IV, 411.)

Heig (P.) de calculo renum, Altdorf. 1625.

Heimburger (D.) Diss. de calculo renum, Regiomont, 1640.

Heinricius (Casp.) de calculi vesicæ natura et amotione, Basil, 1611.

Heime (E. L.) Disp. de origine calculi in viis urinariis, et quatenùs arthritidis est effectus, 4to. Halæ, 1772. (Ploucquet Lit. Med. Digest.)

Heinlein, Historia et curatio calculorum humanorum, Jenæ, 1676. (Voigtel Handbuch der Path. Anat.)

Heister (Laurentius) Diss. de Alto adparatu, Helmstad. 1728. (Halleri Bibl. Chir. IV, 105.)

—— Diss. de lithotomiæ Celsianæ præstantia et usu, Helmstad. 1745. (Halleri Disp. Chir. IV. 157.)

Hellwig (J. C.) Diss. de calculis microcosmi, præcipuè renum et vesicæ, 4to. Gripswald, 1673.

Helmont (J. B. van) de lithiasi, 8vo. 1644.

Helmont (J. B. van) Opuscula medica inaudita; de lithiasi; &c. 4to. Amstel. 1648.

Hempel, Diss. de calculo renum et vesicæ, Giess. 1614.

Hennius, Disp. de calculo renum et vesicæ, Gryphisw. 1649.

Henry (G.) Diss. chemico-medica de acido urico, et morbis è nimia ejus secretione ortis, Edinb. 1807.

Herbert (T. S.) Thesis on lithotomy, Pennsylvania, 1828.

Herbst (J. J.) Disp. de renum et vesicæ calculo, Marburg.

Herman (C. S.) Disp. de calculo, Giess. 1704. (Ploucquet, Lit. Med. Digest.)

Hertzius (J. C.) de variis lithotomiæ administrandæ modis, et Ravianæ methodi præstantiâ, Giessæ, 1727.

Heucher (J. H.) Diss. de calculo per adstringentia pellendo, Witteberg. 1711.

Heurteloup (Baron) Examen critique de l'ouvrage de M. le Dr. Civiale, intitulé de la Lithotritie, &c. 8vo. Paris, 1827.

—— Cases of lithotrity, or examples of the stone cured without incision; followed by a description of the first symptoms of the disease, 8vo. London, 1831.

—— Principles of lithotrity; or a treatise on the art of extracting the stone without incision, 8vo. London, 1831.

Hey (Wm.) Practical observations in Surgery, 8vo. 2nd ed. Lond. 1810—A case of lithotomy in the female. 560.

Heyde (— vander) de calculo vesicæ, Leidæ, 1667.

Hiebner (J. C.) von dem wahrhaften element, eigenschaft, ursprung und zusammenwachs des in dem menschlichen körper befindlichen Steins, 4to. Halle, 1721. (Ploucquet Lit. Med. Digest.)

I, 170.)

Higgins (Wm.) A comparative view of the phlogistic and antiphlogistic theories, to which is annexed an analysis of the human calculus, with observations on its origin and on the most probable means of preventing its formation, 8vo. London, 1789.

Hildanus (H. F.) Grundlicher bericht von dem blasenstein, 8vo. Basil. 1626.

—— de lithotomia vesicæ, 4to. Basil. 1628.

—— Lithotomia Vesicæ; that is, an accurate description of the stone in the bladder, shewing the causes and pathognomical signs thereof, and chiefly of the method whereby it is to be artificially taken out both of men and women by section, wherein the several wayes of operation are described, and the chirurgical instruments lively delineated, 8vo. London, 1640.

—— Cfr. Cheselden.

Hilscher (S. P.) Diss. de unico in homine reperto rene, prægrandem continente calculum, 4to. Jenæ, 1733.

—— Disp. de calculo renum, Jenæ, 1734.

History of the Royal Academy of Sciences from 1699 to 1720, abridged, 8vo. 5 vols.—A stone found in the bladder of a mare, wt. 23 oz. 7 drs. I, 187.

Hochschilt (J.) de calculorum generatione, Basil, 1616.

Hoffman (André) de renum et vesicæ calculo, 4to. Custrin, 1703. (Dict. de Biogr. Med.)

—— (Fred.) Diss. de dolore ex calculo renum, 4to. Halle, 1731. (Ibid.)

—— (Fr.) Observationes et cautiones practicæ in curatione calculi, Halle, 1721. (Ploucquet Lit. Med. Digest.)

—— (C. L.) Prolusio, novum proponens methodum calculum vesicæ sine periculo in maribus secandi, 4to. Steinfurt, 1760. (*Cystotomia per rectum;* Ploucquet Lit. Med. Digest. I, 199.)

Hoffinger (J. F.) Disp. sistens selectum medicamentorum lithontripticorum simplicium specificè ab auctoribus laudatorum, Viennæ, 1768.

Hofmeister (D. F. A. G.) de calculis urinariis collectanea quædam, 4to. Lipsiæ, 1821.

Hohnstein, Anweisung den Stein und Krebs zu heilen, 8vo. Nitsche, 1808.

Home (Sir Everard, Bart.) On the treatment of strictures of the Urethra and Œsophagus, 8vo. 3 vols. London, 1797-1821—Cases of stricture accompanied by calculous concretions in the urethra and bladder, I, 371—Stricture, and stone adhering to the bladder, 404—Stricture, and tumour in the bladder, with a small adherent calculus, 420—Stricture in the urethra, accompanied with a stone in the kidney, which kept up symptoms of irritation in the bladder after the stricture was cured, II, 310—Stricture in childhood produced by calculus in the urethra, III, 55—Stricture brought on by passing sand, 58—Cases of stricture, where lithotomy was performed on account of stone in the bladder, and strictures afterwards returned, 232—Case of gout and gravel, in which the urethra was frequently subject to a paroxysm of gout, 320—A new mode of performing the high operation for stone (from Phil. Trans.) 359—Second case in which the high operation was successfully performed, 369.

—— Practical observations on the treatment of the diseases of the prostate gland, 8vo 2 vols. London, 1811-1818—On the disposition which enlargement of the middle lobe gives to the formation of stone, I, 39—Case of enlargement of the middle lobe, connected with stone in the bladder, II, 66—Letter from Mr. Wm. Brande, on the differences in the structure of calculi, which arise from their being formed in different parts of the urinary passages, and on the effects which are produced by the internal use of solvent medicines (from Phil. Trans.) 195—Some observations on Mr. Brande's paper on calculi, 239—An account of an attempt made in India by Col. Martin to destroy a stone in his bladder; written by himself the year before his death, in which it will appear, that the neck of the bladder was much injured by the instruments employed to file the stone, and never recovered from the effects of the violence com-

mitted upon it, 243.

Home (F.) Clinical experiments, histories, and reflections, 2nd ed. 1782—Ischuria renalis, vesicalis, urethralis, 228—Experiments upon some lithontriptics, 483.

Home (Robert) The efficacy and innocency of solvents candidly examined, with experiments and cases, 8vo. London, 1733. (Med. Chir. Libr.)

Hoole (T.) Disp. de nephritide, Leidæ, 1699.

Horsman (S.) de calculo renum et vesicæ, 4to. Leidæ, 1721.

Horst (G.) de calculo renum et vesicæ, Giess. 1617.

Horstius (G.) Epistola de abusu turundarum post extractionem calculi, 4to. 1628. (Portal, Hist. de l'Anat. II, 257.)

Houstoun (Robert) Animadversions on a late Pamphlet, entitled "Lithotomia Douglassiana," 8vo. London, 1720.

Howitt (Geor.) Diss. de calculis urinariis, 8vo. Edinb. 1824. (Norwich Med. Libr.)

Howship (John) Practical Observations on Diseases of the Urinary Organs, 8vo. London, 1816.—Of calculous affections of the kidney, 4—Irritation of the bladder from stone, 54—Uncertainty of the symptoms of stone, 68—Of sounding, 73—Of adherent calculi, 84—Formation of sacculi of the bladder, 75—Of lithotomy, 86—Of the treatment of gravel, 91.

Hübner (J. C.) vom Stein in menschlichen leibe, 4to. Halle, 1726.

Hubrecht (J.) Disp. de calculo renum, Leidæ, 1678.

Hueber, Diss. de calculo renum et vesicæ, Herbipol. 1748.

Hueber, Prog. de uretere muco, calculis, obstructo, Cassel, 1760.

Hulme (Nath.) A safe and easy remedy proposed for the relief of the stone and gravel, scurvy and gout, &c. and for the destruction of worms in the human body; together with an extemporaneous method of impregnating water and other liquids with fixed air by simple mixture only, 4to. Lond. 1778. (Med. Chir. Libr.)

—— Mittel wider den blasen und nieren-stein, Leipz. 1778.

Humphrey (T.) Diss. de calculi urinosi generatione et incremento, 4to. Lugd. Bat. 1736. (Med. Chir. Libr.)

Hunault (C. B.) Recherches comparatives sur la lithotomie, 4to. Paris, 1824.

Hundertmark (C. F.) de urinâ cretaceâ, Lipsiæ, 1741.

Ilmer, Diss. de calculis microcosmi, Wien. 1692.

Ilseman (J. G.) de lithotomiæ Celsianæ præstantia et usu, Helmstad. 1745. (Halleri Disp. Chir. IV, 157.)

Ingram (D.) Practical cases and observations in Surgery, 8vo. London, 1751—Of stones in the bulb of the urethra, 49—Do. in the bladder, 59—Observations concerning retention of urine from vesical calculi, 53—Method of operating in such cases, 57.

Ingram (R.) On the gout, proving it to be the immediate parent of jaundice, dropsy, and stone, with an account of the difference between obstruction in the kidneys and ureters, and the paroxysm in the back and loins occasioning the loss of muscular action in the lower limbs, 8vo. London, 1767. (Med Chir. Libr.)

Intelligencer (The Medical,) or Monthly Compendium of medical, chirurgical, and scientific knowledge, 8vo. 4 vols. London, 1820-3—Lithotomy noticed, I, 3-47-79-91-100—Urinary concretion on a leaden pipe, 10—Henry on urinary concretions, 20—Formation of vesical calculi, 24—Calculus in a gouty person, 29—Marcet on calculous disorders, 37—Lithontriptic power of soda, 52—Brande on calculous disorders, 59-61-90—Prout on lithate of ammonia, 73-93—Large renal calculus, 109—Vaginal lithotomy, 143—Calculus in bladder of a dog, 146—Rectal lithotomy, 122-168—Nephritis calculosa, 179—High operation, 228-320—Statistical enquiry into the frequency of stone, 291—Extraction of large calculi, 293—Renal calculi, 300—Prostatic calculi extracted, 315-364—Atmospheric pressure to re-

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Itzstein, Diss. de Conductore Cystotomo, 4to. Moguntiæ, 1794.

Jacobi (L. F.) Disp. de Nephritide spuriâ, Erfurt. 1712. (Ploucquet.)

Jacobs (W. S.) Experiments and Observations on urinary and intestinal calculi, with engravings, Philadelphia, 1801.

Jacopi (G.) Riflessioni sulla operazione dell' alto apparecchio fatta nella spedale civico di Pavia, 8vo. Pavia, 1812.

Jæger (C. F.) Disp. de genesi calculi urinarii, 4to. Tubingæ, 1770.

Jaenisch, Diss. "Calculorum consideratio theoretica," Hall. 1758.

Jahn (J. G. F.) de insolitâ calculi ingentis per scrotum exclusione, Vitembergi, 1750. (Halleri Disp. Chir. IV, 47.)

Jantke (J. J.) Disp. de nephritide et calculo renum, Altdorf. 1716.

Jehringius (J. C.) de genuinâ calculorum in humano corpore, præcipuè renibus et vesicâ, generatione, 4to. Jenæ, 1664. (Portal Hist. de l'Anat.)

Jetzke (G. L.) Diss. de lithontriptico nuper in Britanniâ publici juris facto, Halæ, 1739. (Halleri Disp. Chir. IV, 373.)

Johnson (W. J.) Diss. on lithotomy, Pennsylv. 1828.

Johnston (Henry) Practical observations on urinary gravel and stone, on disease of the bladder and prostate gland, &c. 12mo. Edinburgh, 1806.

Jordan (J. C.) Diss. on the operation of lithotomy, New York, 1829.

Journal (The Philadelphia) of the Medical and Physical Sciences, edited by Dr. Chapman, 8vo. 9 vols. 1820-25—Case of calculus in the urethra of a child five years old, I, 149—Description of the anatomy of the urinary bladder, as concerned in the operation of lithotomy, by W. Anderson, II, 55—An attempt to demonstrate that the bladder may be opened by a posterior method of operating, more conveniently to the surgeon, and with much greater safety to the patient, than by any other method hitherto discovered, (the face downwards,) by E. North, IV, 260—Large human calculus, V, 197—Lisfranc's new method of lithotomy in the female, VI. 406—Calculus in a cavity appertaining to the bladder, beneath the integuments of the hypogastric region, VII, 156—Amussat on fracturing calculi in the bladder, 185—Lithotomy forceps recommended by J. R. Barton, VIII, 147—Dupuytren's new operation of lithotomy IX, 207—Report of the Institute of France on M. Civiale's method of destroying the stone in the bladder, 433.——— New Series, 5 vols. 1825-7—An account of Mr. Lukens's lithokonion instrument for pulverizing stone in the bladder, by W. E. Horner, I, 375—Large

calculus passed from female urethra, II, 187—Dr. Mackintosh's case of calculus extracted from the female bladder, III, 158—Lateral operation fatal from hæmorrhage, 159—Case of lithotomy performed by Mr. Clever on himself, 178—Case in which a new method of performing the lateral operation was practised with success, by J. T. Wilkinson, 179—Improvement of Civiale's lithontriptic process, IV, 406—Account of a singular calculous degeneration of the scrotum, for which the whole of that part was successfully removed, by V. Mott, V, 335—Lithotrity by Civiale, 401—Note on a case of lithotomy, by A. L. Cox, 408.

—— (The American) of the Medical Sciences, 8vo. 13 vols. Philadelphia, 1827-34—Georgi's success of lithotomy by the rectum, I, 228—Notice of Dr. Prout on calculus, 417—Recto-vesical operation for stone, by Dr. Wenzl, 461—Civiale's operation for destroying the stone, 464—Lithotomy at l'Hotel Dieu, 468—Urinary concretion of unusual dimensions, 27 oz. 20 grs. removed *post mortem*, II, 212—Benefits of cremor tartari in lithic acid gravel, 438—Liston and Crichton on lithotomy, 455—Breaking down calculi in the bladder, by Amussat, 465—Lithotrity by Civiale, Heurteloup, and Gruithuisen, III, 221—Lithotrity by Lisfranc and others, 468—Success of the lateral operation, 472—Lithotrity, by Z. Pecchioli, IV, 238—Remarkable urinary calculus of oxalate of lime, 333—Lithotrity by Mr. Liston, 506—Do. by Civiale, Heurteloup, and Wattman, V, 221—On lithontripty, by Dr. Hopkinson, 354—Review of Stanley on the lateral operation, 462—Piece of twig, seven inches long, and surrounded with calculous depositions, extracted from the bladder, by Dr. L. Senn, 516—Review of Rigal sur la lithotritie, VI, 188—Do. of Chopart, Maladies des voies Urinaires, 461—Lithotrity on a child, VII, 247—Lithotrity by Dr. Civiale, VIII, 246—Lithotrity at Bagdad, 509—Lithotomy by Professor Physick, IX, 263-537—Statistics of calculous diseases, 531—Silex in urinary calculi, 532—Review of Heurteloup's principles of lithotrity, X, 209—Lithotrity on Dubois and Lisfranc, 244—Case of stone, in which the fundus of the bladder was coated with calculous incrustation, successfully treated, by A. Trowbridge, M. D. XI, 27—Review of Dr. King's book, "Lithotrity and Lithotomy compared," 117—Lithotrity, by Dr. J. Randolph, 546—Review of Brodie on diseases of the urinary organs, XII, 477—Successful lithotrity, by P. S. Spencer, 554—Lithotrity, by Dr. Civiale, XIII, 258.

—— of Science, Literature and the Arts, edited at the Royal Institution of Great Britain, 8vo. 29 vols. London, 1816-30—On the bad effects of the incautious use of magnesia, by E. Brande, I, 297—Observations on the medico-chemical treatment of urinary calculi, by W. T. Brande, VI, 195, VIII, 66, 205—Analysis of some animal calculi and concretions, VII, 193—On the action of nitric acid, chlorine and iodine on uric acid, by M. Vaquelin, VIII, 157—Urinary concretion on a pipe analysed, 361—Observations on the animal substances which generally accompany uric acid in calculi, by G. Brugnatelli, 370—Prout on the pink sediments of urine, IX, 185—Human calculus weighing 32 ounces, XIII, 441—M. Amussat's plan of fracturing calculi in the bladder, XIV, 453—Analysis of a very soft calculus, XVIII, 189—Civiale's new method of destroying calculi, 189—Description of an instrument for destroying the stone in the bladder, by J. B. Griffiths, XX, 21—A letter from A. C. Hutchinson, to Sir E. Home, containing an account of a successful case of the high operation, 44—Analysis of an urinary calculus from a hog, 411—On two new kinds of urinary gravel, XXIII, 246—Analysis of a ferruginous renal calculus, 492—Reward to Dr. Civiale for lithotrity, XXIV, 230—On siliceous gravel, by Dr. Venables, XXVIII, 234—On the cystic oxide calculus, and on the sensible, mechanical and chemical properties of the urine in this diathesis, by Dr. Venables, XXIX, 30—Observations on lithotrity, illustrated by experiments, referring more especially to the improvements introduced by Gruit-

huisen, Civiale, Leroy, and Heurteloup, by G. Burnet, 390.

—— The New Medical and Physical, by Bradley, Shearman, James Johnson, &c. 8vo. 10 vols. London, 1810—Wollaston on cystic oxyd, I, 93—A large calculus spontaneously voided from the bladder of a female, II, 97—On an improved method of lithotomy, by G. Hargrove, 266—Review of Mr. Trye's essay on cutting for the stone, 330—Barlow's cases of lithotomy, IV, 156—Case of immediate union of the wound after lithotomy, 524—Dr. Rodman's case of lithotomy on a man who had attempted to saw or break down the stone in the bladder, V, 520—Obs. on animal concretions, M. de Lens, VI, 288—Brande on magnesia to prevent an increased formation of uric acid, VII, 10—Calculus in ureter causing symptoms of stone, by Mr. Golding, VIII, 380—Large sacs of the bladder causing the same symptoms, 382—Case of lithotomy, 384—M. de Ronge on the high operation, IX, 107.

—— (The Medico-chirurgical) and Review, (monthly) conducted by Shearman, James Johnson, and Palmer, 8vo. 5 vols. London, 1816-18—Wadd on diseases of the bladder, I, 486—Calculus removed from the female bladder by dilatation, II, 229—Howship on calculi in the kidney and bladder, 283—Case of urinary vesical concretion, complicated with an adipose tumour of the abdomen, H. Ward, III, 5—Lithotomy, by Samuel Cooper, V, 54—Stone with nucleus of a piece of elastic gum-catheter, 75—Review of Dr. Marcet's Essay on calculous disorders, 401-493—Dr. Prout on the efficacy of general remedies, particularly purgatives, in preventing calculous affections, 485.

—— The Medico-chirurgical (quarterly,) conducted by James Johnson, M. D. 8vo. 2 vols. 1818-20—High operation for stone at St. George's Hospital, I, 451—Review of Magendie on the causes and treatment of gravel, II, 287—Do. of Carpue on the high operation, 393—Barbantini's case of lithotomy by the rectum, 631—(Cfr. Review, the medico-chirurgical quarterly.)

—— The London Medical, 8vo. 11 vols. 1781-90—Acrel on calculous complaints, III, 16—Case of a fatal ulceration of the bladder from caries of the os pubis, calculi found on dissection, by E. Ford, 80—An account of the inefficacy of soap and lime-water, taken during 14 years, in a case of calculus, by Dr. Bergius, 24—On the operation of lithotomy at two different times, by Beauvais de Preau, IV, 242—On the same, by P. Camper, X, 142.

—— The London Medical and Physical, 8vo. 70 vols. 1799-1833—Col. Martin's case of stone removed from the bladder by filing it away, I, 120—A singular case of calculous obstruction in the ureters, 449—An account of two cases of lithotomy, where the wounds were healed by the first intention, by G. Rowlands, II, 287—An improvement in the bistoire caché, by A Carlisle, III, 193—Ditto, by R. Watt, 195—Enlarged prostate gland, with a sacculus in the bladder, and a calculus in the bladder and ureter, by E. Ford, IV, 390—A prolapsed bladder in the female, containing an enormous calculus, (27 oz.) by T. Paget, VI, 391—Fourcroy, on urinary stones and gravel in men, VI, 527-VII, 60-IX, 242—A new mode of extracting a stone, VII, 429—A description of Guerin's new instrument for lithotomy, VIII, 385—Calculus removed from a boy, having a pin for its nucleus, W. Simmons, IX, 204—Calculi in the *fossa navicularis*, 268—Observations on the urine, by Dr. Bostock, 349—Abernethy's description of his cutting gorget, 393—On the number, nature, and distinctive characters of the materials composing calculi, &c. by A. Fourcroy, 489—Practical observations on the operation for stone, by Mr. Barlow, XI, 1—Numerous calculi voided by a female, XV, 35—On the nature of gravelly and calculous concretions, by T. Egan, XVI, 153-221-305-497—A calculus passed by the rectum, XVII, 64—Analysis of calculi from the bladder of a dog, by Fourcroy, XXI, 369—Brande's experiments on calculi, XXII, 48—An improvement in the groove of the staff suggested, 207—Mascagni on the use

of carbonate of potash for gravel and calculi, XXIII, 45—Wollaston, on cystic oxide, a new species of urinary calculus, XXV, 254—Observations on lithotomy, by T. Smith, XXVI, 285—Letter from Sir J. Sinclair, Bart. on magnesia in calculous complaints, XXVIII, 36—Dr. Yeats on ischuria, XXIX, 653—Brande's additional observations on magnesia in preventing the formation of uric acid, (from Phil. Tr. 1812,) XXX, 324—Lithotomy instruments invented by Prof. Assalini, XXXI, 2—On the uses of neutral carbonate of magnesia in calculous and other complaints, by A. Meyler, 445—Case of stone in the bladder, related by the patient, XXXVIII, 36—Case of lithotomy, the stone being adherent to the anterior part of the bladder, by Dr. Warren, (from New England Journal,) 168—Calcareous matter weighing above 10 lbs. taken from bladder of a horse, 348—Experiments on the use of nitric acid in a certain state of the urine, producing *micturitio frequens, dysuria, and ischuria*, by J. Wood, XXXIX, 451—Calculi in the kidneys and bladder of a bitch, by J. M^c. Lean, XL, 288—Calculus extracted from the bladder through the urethra in a male, by C. Conant, 345—Recent progress in chemistry respecting calculous concretions of the urinary organs, XLI, 109—High operation for stone, by M. Souberbielle, 358—Observations relative to the history of the high operation, by J. Lawrence, XLII, 372—Sutliffe on the lithontriptic properties of soda, XLIII, 29—Review of Carpue on the high operation, 207—Large stone extracted from the bladder by the rectum, by N. Barbantini, 369—Review of Sanson on the recto-vesical operation for stone, 429—Calculi in prostate gland removed by M. Dupuytren, XLIV, 348—Some remarks on Mr. Smith's statistical inquiry respecting the frequency of stone in the bladder in Great Britain and Ireland, by C. Tripe. XLV, 275—Review of Dr. Prout on gravel, calculus, and other diseases connected with a deranged operation of the urinary organs, 384—Mr. Smith's reply to Mr. Tripe on the statements in his statistic inquiry into the frequency of stone in the bladder, XLVI, 117—Review of Arnold on stricture, with a case of stone extracted from the bladder by the dilator, and of improvements of the method of dissolving stone by injection, and of the common operations of lithotomy, 148—Mr. Tripe in reply to Mr. Smith's observations respecting the frequency of calculous disorders in Great Britain, 371—Review of A. V. Berlinghieri on the recto-vesical operation, 430—Wilson on calculous disorders, 484—History of the progress of medicine in regard to lithotomy, XLVII, 19—A grape-shot, incrusted with calcareous matter, removed from the bladder, 301—Mr. Barlow on sounding for stone, 309—Cloquet's memoir, describing six thousand specimens of calculi, referred to, 520—Recto-vesical operation, by Mr. Camoin, XLVIII, 49—Large human calculus at Cambridge, 32 oz. 275—Case of lithotomy with singularly-shaped calculus, by W. Money, XLIX, 116—Amussat's instrument for breaking down calculi in the bladder, 354—New method of performing the operation of lithotomy in the female, by Lisfranc, 440—Campana on the extraction of stones from the bladder, 533—Notice of recent improvements in removing stone from the bladder, L, 54—Urinary calculus, weighing ten ounces, expelled by a natural process, 259—Galvanism employed to effect the decomposition of calculi within the bladder, LI, 40—Progress of lithotomy, 47—Review of Mr. Sleigh's Essay on the posterior operation, 430—Notice of Mr. Key on the lateral operation, LII, 80—Dupuytren's method with the double lithotome-caché, 263—Lithotomy successfully performed on a horse, by W. Mogford, 304—M. Clever's operation of lithotomy upon himself, LIII, 31—Large calculus passed from the female urethra, LIV, 83—Calculi retained in the urethra, 255—Six hundred and seventy-eight calculi removed from one bladder after death, 343—M. Civiale's lithontriptor, 348—Successful case of high operation for stone, by A. C. Hutchinson, 434—Dr. Baillie on calculi in the kidneys and bladder, 474, 477—Case of lithotomy with hæmorrhage, the artery wound-

ed passing over the face of prostate gland, by John Shaw, LV, 1—Proposed improvement on the lithotome-caché of frère Cosme, by A. Blake, 32—Calculus in the urethra, 70—Bicarbonate of soda as a lithontriptic, 522—Urinary calculus removed by dilatation of the female urethra, T. W. Chevalier, LVI, 214—Different methods of operating for the stone, by Dupuytren and Sanson, 233—Large calculus extracted from the bladder of a child, 287—Suture of the bladder applicable to the high operation for stone, 382—Calculus removed from female bladder by dilatation, Dr. Hamilton, 383—Do. by Dr. Ramsay, 384—G. Bell, account of an ingenious method practised by a gentleman on himself, by which 150 calculi were removed from the bladder, 372—Obs. on the analysis of urinary calculi, particularly those of a mixed nature, by J. F. Wood, LVII, 29—Chalky matter in the kidney, 422—Magendie's two new kinds of gravel, 464—Case of perforation of the bladder, and successive formation of calculi, P. L. Serph, LVIII, 317—Calculus in the perinæum, 467—Calculous degeneration of the scrotum, 516—Kidney-bean passed by the urethra, LIX, 550—Urinary calculus lodged in the interior of glans penis, and removed by incision, weighing 284 grains, LX, 365—New operation for stone by Vidal, 469—Do. by Balardini, 469—Bilateral operations at La Pitié, Hôtel Dieu, and Hospice de Perfectionnement, 510—Neapolitan operation for stone in the bladder, 564—Lithotomy performed twice in three days on the same patient, by Dupuytren, LXI, 21—Case of lithotomy, the subject of libel in the Lancet, 127—Difficulty in lithotomy, W. Wickham, 130—Case of a large oblong calculus, impacted in the neck of the bladder and prostatic portion of the urethra, for the extraction of which the patient underwent two different operations the same day, by F. Blandin, 237—Lithotrity, 412—Calculi removed from the bladder by the urethral forceps, death, 519—Of 83 cases of lithotomy, 80 successful, at Hôtel Dieu of Lyons, LXII, 83—Barleycorns passed from the bladder, encrusted, 202—Lithotomy, the stone situated behind the os pubis, 209—Lithotomy by Dr. Ballingall, 203—Civiale's operations, 276—Lithotrity by Mr. Costello, 285-381—Lithotomy, by Prof. Mayo, 425—Lithotrity on a three-year-old girl, 463—Review of England on functional disorders of the kidneys giving rise to calculi, LXIII, 444—Lithotrity, 488-564—Lithotritic instruments of Mr. Lukin, 494—Lithotomy for removal of part of a catheter from the male bladder, by Prof. Mayo, LXIV, 136—Lithotrity, by Heurteloup, 291—Lithotomy, by Syme, 466—Lithotomy by a native in India, 557—Recto-vesical lithotomy, G. Waddell, 560—Clinical lecture on stone in the bladder, by Prof. Mayo, LXV, 33—Buchanan on lithoplatomy, 225—Review of Baron Heurteloup's "Cases of lithotrity," 441—Lithotrity, by Civiale, 562—Lithotomy, by Prof. Mayo, LXVI, 41—Lithotrity, by Civiale, 259—Review of Baron Heurteloup's "Principles of Lithotrity," 410—Stone sacculated and a part left safely at the time of operation, LXVII, 126—Needle swallowed and becoming the nucleus of a stone in the bladder, 245—Review of "King on Lithotomy and Lithotrity," 502—Heurteloup on lithotripsy, LXVIII, 72—Calculus in the urethra of a child causing retention of urine, 158.

—— (The Quarterly) of Foreign Medicine and Surgery, 8vo. 4 vols. London, 1818-22—Operation of lithotomy, the stone afterwards coming away spontaneously, II, 227—A case of needles introduced into the bladder of a young woman and extracted 8 days afterwards, by M. Silvy, 331—Inquiry into the present method of performing the operation of lithotomy, by John Shaw, containing a review of the following papers—Experimental observations on the operation of lithotomy, with the description of a fascia of the prostate gland, which appears to explain anatomically the cause of urinal infiltrations and consequent death, by G. S. Pattison—Observations on the parts concerned in Lithotomy, which are intended to prove that Mr. Pattison's ideas of a prostate fascia are erroneous, by H. G. Jameson

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—— (Anderson's Quarterly) of the Medical Sciences, being a new series of the preceding, 8vo. 3 vols. London, 1824-6—Sleigh's posterior operation of lithotomy, I, 128—Lithotomy by Graefe, 475—Key on lithotomy, 481—Dupuytren's new mode of operating, 481—Delpech on the best mode of lithotomy, II, 137—M. Clever's operation upon himself, 289—Review of Prout on the urinary organs, 598—Liston on lithotomy, 646—Civiale's method of destroying urinary calculi, 647—High operation of lithotomy, III, 134—Cystic oxide calculus, 312.

—— The London Medical and Surgical, edited by Dr. Ryan, 8vo. 4 vols. 1832-4—Lithotrity by Mr. Costello, I, 173—Disease of the kidney, producing signs of stone in the bladder, 305—Review of Dr. King's "lithotrity and lithotomy compared," 433 Mr. Costello, on the danger of the percussion instrument for breaking stone in the bladder, 659-732—Lithotrity at Bagdad, 692—Historical sketch of lithotrity, by M. Leroy d'Etoilles, 703—Lithotomy and one thousand calculi removed, by Dr. Physic, II, 120—Prof. Guthrie's clinical lecture on calculus in the urethra, 554—Account of lithotritic instruments, 626—Lithotripsy by Baron Heurteloup, 830—Abscess of kidney from stone in the bladder, III, 732—New instrument for effecting the chemical solution of stone in the bladder, by T. F. Lucas, 568—New wire-instrument for extracting substances from the bladder, IV, 30—Lithotripsy by Baron Heurteloup, 379-412-605—Lithotrity by Mr. Costello, 437—Lithotomy by Mr. Babington, 509—Clot Bey on frequency of calculous affections in Egypt, 595—Calculus vesicæ in the female, 638—Lithotripsy in Dublin, 720—Calculus broken in the bladder, by Weiss's screw-lithontriptor, 831.

—— (The Dublin) of Medical and Chemical Science, 8vo. 6 vols. 1832-5—Needle swallowed forming nucleus for vesical calculus, by Mr. Logan, I, 111—On uric acid and the products of its decomposition by nitric acid, 377—Review of Dr. King's Treatise, "Lithotomy and Lithotrity compared," II, 84—Calculus extracted from the bladder of a child by Weiss's forceps, extravasation of urine, cure, III, 459—Lithotrity in children, VI, 319—Mondière on hernia of the bladder, 482.

—— The Edinburgh Medical and Surgical, 8vo. 43 vols. 1805-35—On lithotomy, by A. Burns, IV, 56—Queries respecting the causes of urinary calculi, 198-9—Lithotomy rarely performed in Lincolnshire, 531—On the origin of urinary calculi, by J. Barlow, V, 15—Observations on lithotomy, and account of a case in which the operation was performed with the knife, by W. Lawrence, 136—An apology for the cutting gorget, W. Simmons, 326—Observations on Mr. Barlow's theory of the origin of urinary calculi, by W. Goodlad, 438—Quere "are the remote causes of stone and gravel yet discovered," 444—Sequel to the apology for the cutting gorget, W. Simmons, VI, 61—Reply to Mr. Goodlad's observations on the origin of urinary calculi, by J. Barlow, 307—An account of the lithontriptic power of muriatic and nitrous acids, with

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—— (The Edinburgh) of Medical Science, 8vo. 3 vols. 1826-7—The cystic oxide calculus more common than was supposed, I, 234—Case of lithotomy attended with hæmorrhage, by John Shaw, II, 304—Twenty-eight calculi extracted from the bladder without cutting, by G. Bell, 345—Lithotomy, hæmorrhage fatal on sixth day. III, 212—Notice of two new species of gravel, by M. Magendie, 286—Case of the high operation of lithotomy, in which unusual difficulty was experienced in the extraction of the stone, by Dr. Ballingall, 313.

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—— de Médecine, Chirurgie et Pharmacie, par Corvisart, Léroux et Boyer, 8vo. 40 tom. Paris, 1798-1817—Obs. sur un corps étranger introduit dans la vessie, qui a nécessité l'opération de la taille, par Jurine, IV, 425—Obs. sur un calcul de la vessie, qui parait avoir été porté pendant environ 20 ans, sans qu'il ait incommodé le malade, et qui, lors de son extraction, pèsa 1 oz. 26 grains, Dr. Tant, V, 298—Calcul situé au milieu d'un foyer purulent au voisinage de l'estomac, et communiquant avec l'urétère, XV, 213—Nouvelle espèce de calcul, cystic oxide, XX, 425—Mémoire sur l'opération sus-pubienne, ou le haut appareil, et d'un instrument pour l'extraction du calcul vésical, par De Rougé, XXXI, 56.

—— (Nouveau) de Médecine, &c. 8vo. 5 tom. Paris, 1818-9—Retention d'urine occasionnée par un calcul arrêté dans l'urètre au dessus d'un rétrécissement de ce canal, II, 19—Calcul urinaire, dont la base est un tuyau de pipe, IV, 165.

—— de Physiologie Expérimentale, par F. Magendie, 8vo. 11 tom. Paris, 1821-32—Note sur l'emploi de la pile dans le traitment des calculs de la vessie, III, 217—Note sur deux nouvelles espèces de gravelle, VI, 297.

—— Universel des Sciences Médicales, 8vo. tom. 33 à 39, Paris, 1824-6—Sur un procédé à l'aide duquel on peut broyer la pierre dans la vessie, et en favoriser la sortie par l'urètre, par M. Civiale, XXXIV, 226—Analyse du troisième mémoire sur la taille recto-vésicale par Vacca Berlinghieri, et des lettres sur le même sujet de MM. Cavarra et Giorgi, 273—Analyse des recherches comparatives sur la lithotomie, par C. B. Hunault, XXXV, 310—Observation sur une cystotomie pratiquée par M. Clever sur lui-même, XXXVI, 110—Quelques reflexions relatives au procédé de M. Dupuytren, et à celui de M. Sanson, pour la lithotomie, en réponse à l'auteur de l'analyse de la Thèse de M. Hunault, 248—La dissertation sur les différentes méthodes de taille sous-pubienne, par F. L. Senn, analysée, XXXIX, 289.

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—— Universal et Hebdomadaire de Médecine et de Chirurgie pratique, 8vo. 13 tom. Paris, 1830-33—Maladie complexe, avec fistules, calculi; lithotritie, par M. Segalas, I, 369—Civiale, compte rendu du traitement des calculeux, à l'Hopital Necker, II, 148—Ditto lettre sur la lithotritie, III, 232—Segalas, note sur un calcul d'oxalate de chaux, 355—Lithotritie par Pravaz, 509—Opération de taille périnéale, pratiquée pour l'extraction d'une sonde de gomme elastique tombée dans la vessie, IV, 11—Civiale, lettre sur la lithotritie, 59—Reponse à la même, par Dupuytren, 88-113—Analyse de Tanchou sur la lithotritie, V, 480—Do. lettre sur la lithotritie, VI, 231—Heurteloup, de la lithocénose, 360—Nouvel instrument de lithotritie, par M. Ségalas, VII, 196—Taille latéralisée, par J. Moulinié, IX, 5—Opération de taille à l'hôpital de la Pitié, par Clot-Bey, 336.

—— der Chirurgie und Augenheilkunde, von Gräfe und Walther, 8vo. 20 bde. Berlin, 1822-33—Gräfe, glücklich mittelst des von ihm angegebnen gorgerets verrichteter steinschnitt, II, 392—Bemerkungen über die gefahr grosse steine aus der blase zu ziehen, nebst beschreibung eines instrument von H. Earl, vemittelst dessen man mit leichtigheit steine von bedeutender grösse zerbrechen kann, 535—Falle wo sehr grosse steine vorhanden waren, 536—Aeltere beobachtungen dieser art, 538—Früher erfundene instrumente zum zerbrechen solcher grossen steine, der hacken von *Ammonius*, das instrument von *A. Paré*, *Le Cat. Frère Côsme*, *Franco*, *Assalini*, 539, 42—Gräfe, steinschnitt an einem 2 jährigen knaben, III, 253—Die *Home*'sche methode den hohen steinschnitt zu verrichten, 292—*Home*'s steinzange mit einem netzförmigen beutel, 295—Merkwürdiger zu Neapel von *Pensa* unternommener steinschnitt, 297—Von v. *Gräfe* vollführter steinschnitt, wobei ein 43 löthiger stein ausgezogen wurde, 399—C. F. v. Gräfe abhandlung über scrotalsteine, 399—Nachricht zur geschichte desselben, und chemischer untersuchung eines scrotalsteines von seltner grösse, 695-7—*Astley Cooper*'schen instrument zu ausziehen kleinere blasensteine, 692—Chemische untersuchung der blasensteine nach Berzelius, 699—*Leroy's* lithopr one, neues instr. un steine in der blase zu zersägen, IV, 369-70—*Montagna*'s lithotom, 510—Do. instr. zur verrichtung des hohen und seitensteinschnitts, 507—Milderung einer epilepsie durch einheilung nephritischer steine, 586—Steinschnitt von v. Gräfe verrichtet, dadurch gelungene entfernung eines 43 löthigen steines, 587—Steinschnitt durch v. Gräfe, 590—Blasensteine über fötus gebildet, die ihnen zu kernen dienten, V, 151—Ausnahme von zwölf dergleichen steinen aux einer von der blase nach scheide hingehenden fistel, 153—Glücklich ausgefallene versuche an hunden, blasensteine vermittelst galvanismus aufzulösen, 305—Hoffmann's gabel zum steinschnitt durch den mastdarm, 144—Beitrag zur geschichte des steinschnitt durch den mastdarm, 142-510—Diese methode schon in 16 ten jährhundert vorgeschlagen, 510—Steinschnitt durch die scheide, neue methode, 554—Steinschnitt an einem 86 jährigen manne mit glücklich erfolg verrichtet, durch v. Gräfe, VI, 69—Beispeile von scrotalsteinen, welche durch die

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Juch (H. P.) de calculo vesicæ prægrandi in puero novenni invento, Erford. 1745.

Juncker (J.) Diss. quâ de calculi curatione novâ, nuper in Britanniâ publicatâ, modestè disquiritur, Halle, 1741.

Jurin (James, M. D.) An account of the effects of soap-lye taken internally for the Stone, 2nd edition, with an appendix concerning a new medicine for the stone and gravel, 12mo. London, 1745. (Med. Chir. Libr.)

—— An abstract of the case of, written by himself, as relates to his lixivium for the stone and gravel, 8vo. London, 1752. (Libr. of R. C. S. L.)

Kalmann, Diss. de calculo et lithontripticis, Goetting. 1765.

Kalthof, Lithochemiæ Animalis Specimen, Erlang. 1810. (Ersch Lit. der Med. No. 3822.)

Kaltschmidt (C. F.) de genesi calculi renum et vesicæ, 4to. Jenæ, 1751.

—— de ægro inflammatione ventriculi demortuo, calculis renum et vesicæ felleæ, raræ magnitudinis et figuræ, per sectionem detectis, Jenæ, 1757.

Kannegiesser, Diss. de lapidis microcosmici genesi, 1744. (Ploucquet, Lit. Med. Digest.)

Kast (G.) Historia lithotomiæ in eodem homine bis factæ, cum ejus restitutione, 4to. Wirceb. 1778.

Kau, Observationes de calculo, 8vo. (Med. Chir. Libr.)

Kentmann (J.) Calculorum qui in corpore ac membris hominum innascuntur genera duodecim, eorumque descriptio et figura, cum historiis singulorum admirandis, 8vo. Zurich, 1565. (Dict. de Biogr. Med.)

Kern (V. R. von) die steinbeschwerden der harnblase, ihre verwandten uebel, und der blasensteinschnitt bei beiden geschlechten, 4to. Vienn. 1828.

Kesselring (J. H.) Historia et examen methodi Foubertianæ pro sectione calculi, Hallæ, 1738. (Halleri Disp. Chir. IV, 211.)

Key (C. Aston) A short treatise on the section of the prostate gland in lithotomy, with an explanation of a safe and easy method of conducting the operation on the principles of Cheselden, 4to. London, 1834.

Kidts (D. D. de) Disp. de calculo in genere, et præsertim renum et vesicæ, Lugd. Bat. 1717. (Libr. of R. C. S. L.)

Kiesweter (J. C.) de lithiasi sinistro quàm dextro reni magis infestâ, 4to. Halæ, 1738. (Dict. des Sc. Med. III, 473.)

Kind (J. P.) de remediis calculum in renibus diffringentibus, Leidæ, 1724.

King (Thos. M.D.) Lithotrity and Lithotomy compared; being an analytical examination of the present methods of treating stone in the bladder; with suggestions for rendering lithotrity applicable to the disease in almost all its stages and varieties, and remarks on the general treatment of gravel and stone, 8vo. London, 1832.

Kintius (H.) Disp. de nephritide, Leidæ, 1746.

Kirkpatrick (James,) Relation of the success of Miss Stevens' medicine in his case, 8vo. 1739.

Kirstenius (P.) περι λιθιασεως, sive de renum et vesicæ calculo, Jenæ, 1603. (Ploucquet.)

Kist, de exulceratione renum, Rostoch. 1639.

Klein (D. C.) Resultate meiner verrichteten blasenschnitte, nebst beschreibung der merkwürdigsten derselben, 4to. erste abtheilung, Stuttgart, 1816—zweite abtheilung, Darstellung meiner unglüklich sich geendigten blasenschnitte, Stuttgart, 1819.

Klinck (J. R.) de nephritide, Basil, 1608.

Klosner, Diss. de calculo in genere, Ingolst. 1759.

Kockertus (J.) Disp. de renum et vesicæ calculo, 4to. Basil, 1665.

Koene, Diss. de calculo, ejusque sectione, Groning. 1707.

Kohlhaas (J. J.) Diss. de genesi calculi urinarii, 4to. Tubung. 1770. (Dict. de Biogr. Med.)

Kornmann (J. M.) trifolium oder drey bewährte medicamenten wider den stein, Magdeburg, 1726.

Korpinsky, Diss. de impedimentis in lithotomiâ occurrentibus, 4to. Argentorat. 1781.

Krause (R. W.) de calculo renum et vesicæ, Jenæ, 1689.

Krvger (B.) Historia curiosa, genealogia calculorum macrocosmi et microcosmi, per analogismum naturale, Brunopoli, 1714.

Kuhn (J. C.) de calculo, Basil. 1614.

Kuhnrath, Queet. tres necessariæ ad curationem et præcautionem arenæ, sabuli, calculi, 8vo. Lipsiæ, 1607.

Kulmius (J. A.) historia calculi apparatu alto incisi, Gedani, 1730. (Sprengel Gesch. der Oper.)

Lamarque, l'opération latérale simplifiée et abrégée par le moyen d'un lithocystotome, instrument nouveau, qui seul, et avec les tenettes, suffit à cette operation, 12mo. Toulouse, 1769.

Laher, Diss. de renum et vesicæ calculo, Basil, 1670.

Lancet (The) edited by Thomas Wakley, 8vo. 26 vols. London, 1823-4—Lithotomy, by Mr. Travers, vols. I and II, (3rd. ed.) 174-700—Do. by Mr. Cartwright, 179—Do. by Mr. Lucas, (enlarged prostate, stone not extracted,) 288—Sir A. Cooper's lectures on urinary calculi, 641—Do. on lithotomy, 675-689—Symptoms of stone from fungus of the bladder, vols. III and IV, 179—Civiale's new method of destroying stones in the bladder, without the operation of lithotomy, 237—Lithotomy, by Mr. Green, 259—Dupuytren's method with double *lithotome-caché*, 337—Sounding the patient on the table before lithotomy, 423—High operation for hæmorrhage into the urinary bladder, by A. C. Hutchison, 504—Tapeworm in bladder, causing symptoms of stone, 624—Mr. Tyrrell on the symptoms of stone, 634—Do. on lithotomy, 670—Results of the recto-vesical operation, by M. Janson. V, 52—Lithotomy, by Mr. Key, 91-480—Reflections on the method proposed by Celsus for the operation for stone in man, by Prof. Delpech, 117—Lateral and recto-vesical operations for stone at Hôtel Dieu of Lyons, 214—Lithotomy with success, by Gräfe, on a man 86 years of age, 216—Do. by M. Clever on himself, 376—Lithotomy, by Mr. Key, 480—Transverse operation for the stone, by M. Beclard, VII, 58—Lithotomy deferred, because stone not felt, 255—Symptoms of stone, 317—Review of Dr. Prout's treatise upon calculi, &c. 391—Lithotomy, by Mr. Bell, 412—Calculi of prostate gland and bladder, 414—Observations on the lithontriptor and M. Civiale's new method of destroying stone in the bladder, VIII, 15—Review of Dr. Prout's treatise continued, 39—Instances of calculi stopping in the urethra, 153—Lithotomy, by Mr. Shaw, fatal from Hæmorrhage, IX, 271—Lithotomy, by Mr. Crampton, 325—Letter on Mr. Shaw's operation, 363—Further remarks on the same and on hæmorrhage after lithotomy, 457—Giltebrandt's operations for stone at Moscow, 459—On an instrument recently used by Mr. Crampton in an operation of lithotomy, 462—Remarks on Mr. Crampton's lithotomy-net, 577 — Do. on Mr. Shaw's case, 589—Fatal lithotomy by Mr. Key, artery of the bulb wounded, 589—Lithotomy by Mr. Lawrence for a very small stone, with account of the previous sounding in the theatre, 592—Lithotomy by Mr. Key, 842—Do. by Mr. Green, 844—Anomalous affection, resembling stone in the bladder, 845—New method of operating for the stone by the rectum, by Dr. Ruy, X, 114—Retention of urine, enlarged prostate with calculi, 191—Extraction of a needle-case from the female bladder, 377—M. Meyrieux's instrument for destruction of stone, 377—Remarks on Dr. Civiale's method, 377—Lithotomy by Mr. B. Cooper, 538-635—Do. by Mr. Green, 540—Disease of bladder with symptoms of stone, frequent sounding, 633—Lithotomy by Mr. Key, 862—On spasmodic contraction of the bladder on a calculus during lithotomy, by R. Allan, XI, 20—Persevering sounding for stone on the operating table, 59—Calculus cut out of the urethra,

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Civiale to the invention of lithotrity, 599—Weiss' urethral forceps, 638—Edwards, on the lithontritic claims of Drs. Civiale and Heurteloup, 648—Lithotrity by Mr. Costello, 669—Lithotomy at country hospitals, 682—Baron Heurteloup's first lithotriptic operation in England, 762—Lithotomy by M. Roux, 767—Lithotrity by Dr. Civiale, 792—Improvements on Dr. Civiale's lithontritic instruments, 798—Process and history of lithotrity, by D. O. Edwards, XVII, 22—Stone from a bullet shot into the bladder, 31—Costello, on the claims of M. Civiale and Baron Heurteloup in lithotrity, 109—Lithotomy at the Glasgow Infirmary, 112—Do. by Mr. Lawrence, 165—Costello's account of Civiale's instruments and the operation of lithotrity, 189—Lithotrity performed on two children, by M. Leroy, 231—Comparison of lithotomy and lithotrity, by Mr. Lawrence, 238—Observations by Dr. Auchincloss on a case of lithotomy at the Glasgow Infirmary, 244—Cystotomy on a female, hair extracted, 261—Lecture on lithotrity by Heurteloup, 264—Lithotomy by Mr. Green 290-292—Termination of Mr. Sewel's case of lithotomy on the horse, 295—Lithotomy at the Colchester Hospital, 328—Remarks on a fatal case of lithotomy, by Mr. Lawrence, 335—Amussat's lithontritic operations, 599 Baron Heurteloup, cases of lithotrity, 737-830—Stone in the kidney, XVIII, 49—Review of Dr. England on "Urinary Calculi," 53—Lithotrity by Baron Heurteloup, 78-240-491-863-940—Operations of lithotomy, 143-348-398-789—Recto-vesical operation, 188—Lithotomy fatal in five hours, 223—Operations of lithotrity, 461-656—W. Lawrence on calculi in the bladder, 813—On urinary calculi, 823—On the palliative treatment of, and operations for, stone, 849—On lithotomy, 955—Improved mode of operating in lithotomy, G. Walker, XIX, 65—Operations of lithotomy, 349-472-660—Lithotrity by Baron Heurteloup, 657—Lithotomy in Egypt, 671—Death from pleurisy after lithotomy, XX, 99—Stone in bulb of the urethra, 100—High operation discouraged, 122—Costello on lithotrity, 93-124-173-362-457-583—Baron Larrey's report on Dr. Civiale's lithotrity, 229—Extraction, by incision, of a calculus projecting in the perinæum, 351—Failures in lithotomy, 612—Calculus removed from the female bladder by Weiss's dilator, 699—Lithotomy with the bistoire caché, XXI, 135—Review of Heurteloup's "Principles of Lithotrity," 169—Cases of lithotrity, 208-619-830-843—Case in *training* for lithotrity, 230—Death from stone, 313—Thirteen cystic-oxide calculi discharged from an opening between the umbilicus and pubes, H. Neill, 411—Case of lithotomy, 618—Lithotomy, the stone having caused abscess in the perinæum, 748—Review of King, "Lithotrity and lithotomy compared," XXII, 122—Heurteloup on destruction of stone in the bladder by percussion, 235-335—On a new catheter for bringing away fragments of calculi, 296-366—Mr. Edwards' lecture on the origin, progress, &c. of lithotripsy, 345—Costello, letter on the dangers attending Heurteloup's instrument for breaking stone, 362—Second letter on the same subject, 430—Broken portion of elastic catheter removed from the bladder, 442—Replies to the letters of Mr. Costello on Baron Heurteloup's mode of breaking calculi, 463—Cases successfully treated by percussion, by Baron Heurteloup, 493-567-626—Calculus removed from the female bladder by Weiss's dilator, 499-770—Reply of Mr. Costello to the letters in defence of Baron Heurteloup's new mode of breaking stone in the bladder, 521—Replies to Mr. Costello, 598—Cases of calculus treated by lithotrity, Mr. Costello, 649-679—Piece of bougie removed by cystotomy, 767—Cases of calculus treated by percussion, Baron Heurteloup, XXIII, 23-521-622-813—Mr. Costello's calculus-percuteur, 316-410—His curved percuteur, 345—His improved do. 466—Instruments for breaking calculi, of Baron Heurteloup and Costello, 373-376-720—Cases of lithotomy, 506—Clot Bey's account of lithotomy, 600-669—Cases of stone cured by the lithotrite, W. B. Costello, 624-637-747—Heurteloup on urethral lithocenosis, 683—

Costello on Clot Bey's method of lithotomy, XXIV, 6—His improved percussor, 1I—Leroy on lithotrity, 27—Cases of lithotomy, 94-316-511-537-543-611—Stone in the bladder from injury to the loins, lithotrity, meningitis, cure, by W. B. Costello, 109—Lithotripsy, cure in one sitting, by the same, 203-330—Lithotripsy, by Baron Heurteloup, 384-418-515-560-564-725-815—Velpeau on lithotrity, 392—Lithotripsy, diseased kidneys, influenza, death, W. B. Costello, 497—Vindication of Mr. Costello, 626—The trigger-percussor, 700-769-794—Stone in the bladder, lithotripsy declined, lithotomy performed, laceration of the rectum, recovery, 736—Weiss's claim to the invention of the percussor, 785-820—Lithotripsy, by E. A. Spilsbury, XXV, 32—Cases of lithotripsy, 47-122-748—Weiss's invention of the screw-lithotrite, 215-244-856—Vesico-vaginal fistula with calculus, 345—High operation for stone, 499—Modification of the lithotritic percuteur, 791—Lithotripsy and lithocenosis, by Baron Heurteloup, 923-984—Lithotrity, XXVI, 32—Weiss's invention of the urethra-dilator, 48—Lithotomy with a new director, G. W. James, 554—Pantaleo's new method of extracting stone from the bladder by a perinæal incision, 557—Blandin's "Parallel between lithotomy and lithotrity," 683—Discussion thereon between Sanson, Velpeau, and Lisfranc, 686.

Lange (C.) Diss. de calculo humano, 4to. Lipsiæ, 1650.

—— Diss. de calculi humani generatione, 4to. Lipsiæ, 1655.

Langedult (Petr.) Disp. de lithiasi, 4to. Lugd. Bat. 1663.

Langen (Car. Nic.) Historia lapidum figuratorum Helvetica, 4to. Venet. 1708. (Ploucquet, Lit. Med. Digest. I, 170.)

Langenbeck (C. J. M.) über eine einfache und sichere methode des steinschnittes, mit einer vorrede von Dr. J. B. Siebold, 4to. Würzburg, 1802.

Langrish (B.) Physical experiments upon Brutes, chiefly with a view to discover a method of dissolving the stone, 12mo. London, 1746.

Lanphier (S.) Diss. de calculo renum et vesicæ, 8vo. Edinb. 1778.

Lantzenberger, Diss. de renum et vesicæ calculo, Lipsiæ, 1621. (Ploucquet.)

Laudenos, Ergo renum et vesicæ lithiasis curabilis, Parisiis, 1575. (Ploucquet Lit. Med. Digest. I, 184.)

Launai (C. D. de) Dissertations physiques et pratiques sur les maladies de la pierre, 12mo. Paris, 1700. (Med. Chir. Libr.)

Laurembergius (G.) Epistolica dissertatio, continens curationem calculi renum et vesicæ, 8vo. Lugd. Bat. 1619. (Libr. of R. C. S. L.)

Lawson (G. F.) Diss. de calculo urinario et lithontripticis, 8vo. Edinb. 1788.

Lavater, Diss. de calculo renum et vesicæ, Basil. 1718.

Lazari (J. J.) Admiranda naturæ ad calculos curandos, Messan. 1622. (Ploucquet Lit. Med. Digest. I, 192.)

Lechelius (J.) de lithiasi, Altdorf. 1663.

—— epistola de rene exulcerato et vesicæ calculo, lumborum doloris, purulentæ mictionis et dysuriæ, causis, 4to, Brunswic. 1665.

Leew (T.) Disp. de nephritide, Leidæ, 1691.

Leproust (M.) Dissertation sur l'hémorrhagie déterminée par l'opération de la taille latéralisée, 4to. Paris, 1802.

Leriche, Diss. sistens probatissimam calculi vesicæ extrahendi methodum, peculiari observatione calculi, totam vesicæ capacitatis, feliciterque extracti, confirmatam, 4to. Argentorati, 1759.

Leroux (Antoine) Mémoire sur la taille latérale, 8vo. Dijon. (Dict. de Biogr. Med.)

Leroy (J. d'Etiolle) Exposé des divers procédés employés jusqu'à ce jour pour guérir de la pierre, sans avoir recours à l'opération de la taille, 8vo. Paris, 1825.

Levacher (G.) Histoire de frère Jacques, lithotomiste de la Franche-Comté, 12mo. Paris, 1750.

Lewkowiez (X. a) Novum auxilium experiendi calculi in collo vesicæ urinariæ, ope duarum forcipum quas invenit, 4to. Valladolid, 1812. (Bern-

stein Gesch. der Chir.)

Libert (H.) Regiment in steinbeschwerden, 8vo. Amstadt. 1681.

Lide (J. W.) Inaug. Diss. on the medical treatment of urinary calculi, 8vo. New York, 1819.

Liberkuhn (B.) Diss. de nephritide, Leidæ, 1743.

Liljeblad (S.) de usu lapidis suilli in lithiasi renali, 4to. Upsal, 1796.

Link (H. F.) Commentatio de analysi urinæ et origine calculi, 4to. Gottingæ, 1788.

Linnæus (C.) Disp. de generatione calculi, 4to. Upsal, 1749. (Ext. in Amœnitates Academ. 1787.)

Lister (Martin) de calculo humano, 4to. Gottingæ, 1696. (Libr. of Med. Soc. Ed.)

Litchfield (J. C.) Observations on lithotomy, and on the formation of urinary calculi, 8vo. London, 1826.

Lizzari (Anton.) Dissertazione epistolare relative a due operazioni di litotomia, 8vo. 1767. (Ploucquet Lit. Med. Digest. I, 204.)

Lobb (Theophilus) A Treatise on dissolvents of the stone, and on curing the stone and gout by aliment, shewing by reason, supported with experiments and cases, the probability of *dissolving* the stone, either in the *kidneys* or *bladder*, &c. 8vo. London, 1739.

—— An address to the Faculty of Physic, relating to Miss Stephens' Medicine, 8vo. London, 1739.

Lobé (J. P.) de diversâ lapidum origine, Leidæ, 1742.

Lobstein (J. F.) Diss. de calculis vesicæ urinariæ cysticis, 4to. Argentorati, 1774.

Locher (V.) Disp. de renum et vesicæ calculo, Basil, 1670.

Loder (Just-Chretien) Lithotomiæ Lecatianæ emendatæ descriptio, 4tó. Jéna, 1785—Descriptio calculi urinarii singularis, 4to. Jéna, 1798—Descriptio calculi renalis conspicuæ magnitudinis, 4to. Jéna, 1801—Observatio calculi vesicæ urinariæ fœminæ spontè excessi, 4to. Jéna, 1801—Calculorum renalium ingens numerus in fœmineo cadavere observatus, 4to. Jéna, 1801. (Dict. de Biogr. Med. VI, 91.)

Loescher, Diss. de lapidum concretione, Witteb. 1715.

Loew (J. F.) de calculo microcosmico, Pragæ, 1686.

Loew, Disquisitio calculorum renum et vesicæ, 12mo. Pragæ, 1719.

Lossius, Diss. de renum et vesicæ calculo, Erford. 1735.

Louis (A.) Disp. de methodi Hawkinsiani præstantiâ in calculosorum sectione, 4to. Paris. 1769.

Luden (J.) de λιθογενέσια macro- et micro-cosmi, 12mo. Leidæ, 1713.

Ludolff (Jerôme) Diss. de calculi renum et vesicæ torturâ pathologico-therapeuticè consideratâ, 4to. Erford. 1725.

Luiscius (A. L.) de calculo renum et vesicæ, 4to. Leidæ, 1720.

Luther, Diss. de renum et vesicæ calculo, Erford. 1735.

Lyserus (Michel) de calculo renum et vesicæ, 4to. Hafniæ, 1651.

Macasius (J. C.) Diss. de calculo renum, Lipsiæ, 1666.

Macdonnell (J.) Diss. de calculo, 8vo. Edinb. 1755.

Macfarlane (John) Clinical reports of the surgical practice of the Glasgow Royal Infirmary, 8vo. 1832—Calculus of 6 oz. 5 drs. successfully extracted, 106—Lithotomy successful, the stone encysted, 108—Ditto the stone grasped by the bladder, operation *à deux* temps, 109—Ditto with enlarged prostate, cure, 109—Ditto with hæmorrhage, 110—Ditto prostate hard and tumid, 111—Ditto fatal from urinary extravasation and peritonitis, 112—Ditto fatal from obstructed bowels produced by the pressure of an osseous tumor of the mesentery, 114—Ditto with extensive disease of prostate gland and bladder, 121 Three cases of the operation in children, in one small-pox supervened, 122—Successful lithotomy on an extremely sickly and diseased child, 126.

Macklæus (J.) Diss. de calculo renum, Argen-

torati, 1637.

M'Coy (Joseph) Thesis on the pathology and medical treatment of calculous diseases, Transylv. 1829.

Macquart (H. J.) "La taille latérale s'exécute-t-elle plus sûrement et plus facilement avec l'instrument connu sous le nom de lithotome caché?" Paris, 1754. (Halleri Disp. Chir. IV, 311.)

Macquer (P. J.) "An in calculo renum et vesicæ, pro natura calculi, ætate et temperamento ægrotantis, remedium alkalino-saponaceum Anglicum?" Paris, 1742. (Halleri Disp. Chir. IV, 411.)

Macro de Marchi, osservazioni col esposizione di una nova maniera di ridurre in pezzi la pietra in vescica, 8vo. Venezia, 1799.

Magazin für die gesammte Heilkunde, herausgegeben von J. N. Rust, 8vo. 34 bde. Berlin, 1816-31 Von der schädlichkeit des darinlassens einer röhre in der steinschnittwunde, VI, 410—Dubois, methode den stein bei weibern zu operiren, 413—Brosse, vom seitensteinschnitte nach Dubois, VII, 237—Ueber die methode blasensteine durch das rectum auszuziehen, XII, 146—Geschichte eines steinkranken und steinoperation, von Dr. Flemming, XIII, 87—Versuch die entstehung des blasensteins zu erörtern, von Dr. Eggert, 367—Steinkrankheit durch verengerengen der harnröhre veranlasst, XV, 16—Beschreibung des *Civiale*'scher lithontripter, XVIII, 253—Abgang eines grossen blasensteins, XXII, 196—Harlemmer oehl gegen blasensteine, 197—Dr. H. von Arnim ueber das verfahren des Dr. Civiale, den stein in der blase zu zerstören, XXIII, 546—Harlemmer oehl gegen lithiasis, XXV, 191—Seitensteinschnitt, 527—Ein markwürdiger harnblasenstein, beschreiben von Dr. Eggert, XXVII, 527—Beschreibung einer tödlich abgelaufenen *febris intermittens perniciosa* bei gleichzeitiger *lithiasis* der linken niere, XXIX, 554—Ein neues instrument zur beseitigung des blasensteins ohne blutige operation, XXX, 476.

Magendie (F.) Recherches physiologiques et médicales sur les causes, les symptomes et le traitement de la gravelle, avec quelques rémarques sur la conduites et le régime que doivent suivre les personnes auxquelles ou a extrait des calculs de la vessie, 2de. ed. Paris, 1828.

Major (J. D.) Historia anatomica calculorum insolentioris figuræ, magnitudinis ac molis, in renibus Sperlingü repertorum, 4to. Lipsiæ, 1662.

Majus (T.) Diss. de calculo renum et vesicæ, Witteberg. 1630.

Makowsky, Diss. "Liquorem Alkahest summum vesicæ calculum per injectionem resolvens ac tutissimum remedium sistens," Regiom. 1742. (Ploucquet.)

Mappus (M.) de dolore nephritico, Argentorat. 1672.

Marbach (H.) Diss. de renum et vesicæ calculo Marburg, 1611.

Marcet (Alex.) An Essay on the chemical history and medical treatment of calculous disorders, 8vo. London, 1817.

Marchand, Diss. de nephritide, Basil. 1738.

Maret, cfr. Sammlung.

Marianus Sanctus Barolitanus, Libellus de calculo renum et vesicæ, ejusque causis, signis et curatione, 4to. Paris, 1540. (Ext. in Uffenbachii Thesaur. Chir. 901.)

—— Libellus aureus de lapide vesicæ per incisionem extrahendo, 4to. Paris, 1535. (Ibid. 909.)

Marie de St. Ursin (P. J.) Etiologie et théra peutique de l'arthritis et du calcul, ou opinion nouvelle sur la cause, la nature et le traitement de la goutte et de la pierre, 8vo. Paris, 1816.

Marini (G.) Prattica delle più difficili operazioni di chirurgia che riguardano il litotomo ed oculista, 8vo. Roma, 1723.

Marteau (L. R.) "Ergo ad extrahendum e vesicâ calculum, diversa, pro re natâ, debet usurpari chirurgia, 4to. Parisiis, 1746.

Martinenq (J. B.) "En in lithotomiâ calculi exitus per suppurationem vulneris expectandus," 4to. Parisiis, 1752.

Martini (D.) Disp. de calculo renum et vesicæ,

Jéna, 1702.

Masotti (D.) Lettera sopra gl' instrumenti necessari alla litotomia delle donne, e sopra l'ago Barbettiano, Firenza, 1756.

—— La Litotomia delle donne perfezionata, 8vo. Firenza, 1763.

Massachusetts Medical Society, 2 vols. 1808-13—Case of a calculus at the termination of the ureter projecting into the bladder, found on dissection; also another case, where a foreign substance introduced became nucleus of a vesical calculus which in nine months weighed 9 drs. I, 90—Vesical calculus fatal in a boy, with the dissection, 53.

Massis (N. F.) de calculo renum et vesicæ, Leidæ, 1703.

Mattear (J.) Diss. de calculo vesicæ, 8vo. Edinb. 1749.

Matthæus (J.) de calculis in vesiculâ seminali repertis, aliisque notatis anatomicis, 4to. Francof. ad Viad. 1765. (Med. Chir. Libr.)

Maul (J. G.) de lithiasi, et humano rene dextro in materiam lapidosam degenerante, 4to. Eisenberg, 1754.

Mayer (Cohen) Diss. de calculo et lithontripticis, Gottingæ, 1765.

Mead, "Epistola lithontripticorum Stephani exhibendi methodos exhibens," London, 1750, (Ploucquet.)

Meckel, Diss. "Observationes duæ rariores circa calculos in corpore humano repertos," Hallæ, 1788.

Medicaments for the Stone, codex MS. in Bibliothecâ Ashmoleanâ, circa 1640. (Haller. Vigil. v. Creutzenfield.)

Meek'ren (J. à) Observationes medico-chirurgicæ, 12mo. Amstel. 1682—De renis dextri urinariæque vesicæ suppuratione, 167—De rene simplici, 169—De calculo renali lumbos perforante, 183—De calculo ureterem renis dextri obturante, 190—De calculo vesicæ urinariæ in muliere, extracto, 264.

Meibomius (J. H.) Diss. de calculo renum, 4to. Helmst. 1679.

Mémoires de la Société Médicale d'Emulation, 8 tom. 8vo. Paris, 1802-7—Observations sur les calculs urinaires de l'homme, par Fourcroy, II, 63—Mémoire sur l'Hémorrhagie après l'opération de la taille latérale, par A. Richerand, IV, 267—Mémoire sur l'appareil urinaire, par A. Richerand, IV, 305.

Mémoires de l'Académie Royale de Chirurgie, 8vo. ed. 5 tom. Paris, 1819—Observations sur les pierres enkystées, et adhérentes à la vessie, par Houstet, I, 300—Nouvelle méthode de tirer la pierre de la vessie, par Foubert, 481—Des pierres contenus dans les hernies de la vessie, par Verdier, II, 41—Sur les cas où la néphrotomie se fait avec succès par Lafitte, 162—Recherches historiques et critiques sur la néphrotomie, ou taille du rein, par Hévin, III, 262—Sur les pierres urinaires formées hors des voies naturelles de l'urine, par Louis, 330—Collection de plusieurs observations singulièrs sur des corps étrangers insinués dans la vessie, par Morand, 522—Rapport des expériences faites par l'Académie sur différentes méthodes de tailler, par Louis, 534—Sur les hernies de la vessie, par Pipelet, IV, 249.

Mémoires de l'Académie Royale de Médecine, 4to. 4 tom, Paris, 1828-35—Observations sur l'opération de la taille, par M. le Baron Larrey, I, 251.

Mémoires de l'Académie Royale de Prusse, 7 tom. 1770—Examen chimique d'un sel d'urine fort rémarquable, qui contient l'acide de phosphore, par Magraf, I, 152—Sur le sel fusible d'urine, II, app. 45—Nouvelles observations chimiques et pratiques sur le sel naturel de l'urine de l'homme, par Schlosser, III, app. 3—Sur la base du sel de l'urine, app. 21—Sur les pierres du corps humain, IV, 30-80—Observations anatomiques sur les pierres trouvées dans les différentes parties du corps humain, par Meckel, 102—Recherches sur la formation des concrétions graveleuses, à l'occasion d'une pierre sortie par un abcès percé dans les hypocondres, par Eller, 338—Sur les pierres du rein, app. 32—Sur la composition des pierres du corps humain, app. 35.

Mémoires et Histoires de l'Académie Royale des Sciences, 108 tom. Paris, 1666-1790—Sur une nouvelle manière de tailler de la pierre, A.D. 1669, Hist. 30—Sur des pierres dans les parois de la vessie, A.D. 1702, Hist. 22—Observations sur deux pierres trouvées dans les parois de la vessie d'un garçon de 20 ans, par Littre, Mém. 26—De la dissolution des pierres de la vessie, par Littre, A.D. 1720, Hist. 23, Mém. 436—Recherches sur l'opération de la taille par l'appareil latérale, par Morand, A.D. 1731, Hist. 22, Mém. 144—Histoire des opérations de la taille latérale que M. le Cat a faites tant à Rouen qu'à Dieppe, A.D. 1734, Hist. 41—Succès de M. Morand, 46—Sur la taille latérale des MM. le Cat et Morand, A.D. 1737, Hist. 52—A.D. 1738, Hist. 47—Détail de 27 tailles latérales faites cette année, A.D. 1739, Hist. 20—Sur le remède Anglois pour la pierre, Hist. 21, Mém. 375-441—Histoire de 17 opérations de la taille (3 morts) A.D. 1740, Hist. 54—Observations sur les remèdes de Mad. Stephens pour la pierre, par Morand, A.D. 1741, Mém. 123—A.D. 1742, Hist. 50—Taille latérale, 17 opérés, 4 morts, A.D. 1743, Hist. 89—Effet rémarquable du remède de Mad. Stephens, 99—Opération de la taille latérale par Grillet, 24 opérés, 4 morts, A.D. 1744, Hist. 14—Communication de M. Morand sur la taille de M. Vacher, A.D. 1745, Hist. 28—Une longue épingle de fer dans la vessie, mort de la malade aprés l'opération au haut appareil, A.D. 1750. Hist. 50—Calculs dans le rein et dans la vessie, A.D. 1757, 30—Calcul dans la vessie d'un cheval, (weight 1 lb. 3 oz.) A.D. 1758, Hist. 46—Une aiguille d'ivoire dans la vessie, A.D. 1759, Hist. 86—Un épi de blé dans la vessie d'un homme, A.D. 1763, Hist. 38—Recherches sur la nature des pierres des hommes et des animaux, par Tenon, A.D. 1764, Hist. 47, Mém. 374—Opérations de la taille par le Cat, 59 opérés, 1 mort, A.D. 1766, Hist, 59.

Memoirs of the Medical Society of London, 8vo. 6 vols. 1787-1805—A case of stone in the urinary bladder, successfully treated, by giving water impregnated with fixed air, salt of tartar, and weak spirit of vitriol, J. Harrison, I, 225—Remarks and cautions respecting stones in the urethra, J. Wathen, 290—Case of stones in the kidnies, S. Lowdell, 319—Case of calculi passing through the bladder into the rectum, J. Johnstone, III, 535—Diseased kidney and stone in the bladder, T. Erratt, V, 53—Account of lithontriptic power observed in the muriatic acid, P. Copland, V, 71-VI, 601—On the position of patients during lithotomy, N. Smith, VI, 227.

Memoirs of the Literary and Philosophical Society of Manchester, 8vo. 8 vols. 1789-1819—A memoir on uric acid, by W. Henry (in vol. II of 2nd series, 391.)

Memorie per i Curiosi di Medicina, 8vo. 6 tom. Napoli, 1800-2—On lateritious sediments in human urine, F. Murabelli, I, 184—On diseases of the urinary passages, (a calculus cut out of the *fossa navicularis* of a child 24 hours after birth, having caused complete retention of urine,) S. Scuttigna, VI, 145.

Menestral (J.) et Fr. Girard, "Ergo æger ad λιθοτομιαν balneo præparandus," Paris, 1675.

Mentzinger (M. M. C.) de calculo renum, 4to. Argentorat. 1780. (Med. Chir. Libr.)

Mercier (Peter le) Quæstio medico-chirurgica "An ad extrahendum calculum dissecanda ad pubem vesica?" Paris, 1635. (Cfr. Cheselden.)

Merclin (A.) Abbildung der grossen steine, welche sich in körper gefunden, &c. 4to. Nürnberg, (Ploucquet.)

Mertens, Diss. "Variarum theoriarum circa lithogenesin historia atque recensio, 4to. Erford. 1799.

Mertrüd, Diss. de calculo renum, Paris, 1770. (Dict. de Biogr. Med.)

Meresse, Thèse sur la lithotomie, Strasbourg. 1823.

Mery (J.) Observations sur la manière de tailler dans les deux sexes, pour l'extraction de la pierre, pratiquée par frère Jacques, 12mo. Paris, 1700.

Metz (J. P.) Disp. de calculo humano, Utrecht,

1690.

Meyer, Disp. medico-chir. de lithotomiâ, Heidelberg. 1710.

Meylet (G. G.) Diss. de calculosis, Edinb. 1798.

Mezger (G. B.) Scrutinium lithogeneseos in corpore humano ex occasione singularis casus institutum, Tubing. 1683.

Michaelis (C. F.) Etwas über den blasensteinschnitt, 4to. Marbourg. 1813. (Ersch Liter. der Medicin, No. 4093.)

Middleton (John, M. D.) A short essay on the operation of lithotomy as it is performed by the new method above the os pubis, to which is added a letter relating to the same subject, from Mr. Macgill of Edinburgh to Dr. Douglas, 4to. London, 1727.

Millett (E.) Diss. de calculo, Edinb. 1795.

Mockius (E.) Λιθοκοπη ιατρικη, sive de calculo in homine expositio singularis, Basil, 1601.

Mockius (J.) Diss. de lithiasi sive morbo calculoso, Friburg. 1614.

Moegling (D.) Diss. de fabricâ renum eorundemque calculosâ constitutione, Tubingæ, 1799. (Schweickhard Cat. Rat. Diss.)

Molten (J. J.) Eine sonderbare bemerkung von steinen, welche in den harngängen zwischen den häuten der urinblase gefunden worden, 8vo. Cassel, 1779.

Mombers (A.) Tract. vom nieren und blasenstein, nebst einen abriss des vom herrn Heister glücklich aus der blase geschnittenen wundersam gebildeten steines, Helmstadt, 1735.

Mont (N. du) Disp. de calculo renum et vesicæ, Basil, 1690.

Montabourg (J. A. R. de) Disp. "En ad extrahendum calculum dissecanda ad pubem vesica," Parisiis, 1768.

Morand (S.) Traité de la Taille au haut appareil, où l'on a rassemblé tout ce qu'on a écrit de plus intéressaut sur cette Opération, avec une dissertation de M. Morand et une lettre de M. Winslow sur la même Matière, 12mo. Paris, 1728. (Med. Chir. Library.)

—— A dissertation on the high operation for stone, translated by John Douglas, with an appendix containing an account of 60 odd patients cut after this method, 8vo. Lond. 1729.

—— Recueil d'expériences et d'observations sur la pierre, 2 tom. 12mo. 1743.

Morin (J. C.) Essai sur les accidens qui suivent et reconnaissent pour cause la taille dite latéralisée, 4to. Paris, 1813.

Morin, cfr. Berlinghieri.

Morland, Diss. sur un nouveau méthode de lithotomie, 1802.

Moser, Diss. "Solutio calculi in vesicâ urinariâ (per injectones) lithotomiæ præferenda," Heidelberg. 1799.

Mosovius, de calculorum animalium eorumque imprimis biliariorum origine et naturâ, 8vo. Berol. 1812.

Müller (J. S.) Disp. sistens rarum de calculo vesicæ observationem et epicrisin, Argentorati, 1769.

—— Diss. de lithotomiæ administratione, Hallæ, 1797.

—— Lithontripticorum examen, Hallæ, 1797.

—— (N.) Disp. de nephritide, Erford. 1712.

—— (G. A.) Disp. de dolore renum, Argentorati, 1736.

Murray (J. A.) Commentatio de arbuto uvæ ursi contrà calculos, Götting. 1765.

Murry, Disp. "An ad extrahendum vesicæ calculum diversa, pro re natâ, debeat usurpari chirurgia," Parisiis, 1764.

Museum (The Medical) 8vo. 3 vols. London, 1763-4—An account of De Haen's Diss. on the stone, translated from his *ratio medendi*, I, 15-89-601—Case of a patient who voided a large stone through the perinæum from the urethra, Joseph Warner, 436—An account of two stones, of remarkable shapes and sizes, which for the space of six years were firmly lodged in the urethra, and at length successfully cut out from thence, by the same, II, 43—Stones in the kidney, with remarks on the operation of nephrotomy, by John Douglas, 368—P. Canvane on

the use of castor oil in calculous disorders, III, 572.

—— (The Philadelphia Medical) 8vo. 3 vols. 1805-7—Curious mode of destroying the stone in the bladder, by sawing it into small pieces, II, 234.

Muter (Robert) Practical observations on the lateral operation of lithotomy, and on various and new modes of performing that operation; with remarks on the recto-vesical operation, 8vo. New York, 1824.

Mye (F. van der) De calculo genuino tractatus, 4to. Hagæ Com. 1624.

Nahuys, cfr. Cat (C. N. le) p. 176.

Nauche (J.) Nouvelles recherches sur les rétentions d'urine par rétrécissement de l'urètre et par paralysie de la vessie, suivies de rémarques sur la gravelle, 8vo. 3ème. ed. Paris, 1806.

Neander (C.) Λιθολογια ιατρικη, και λιθιασεως θεραπεια, Argentorum, 1622. (Ploucquet Lit. Med. Digest. I, 170.)

Nebelius (D.) Diss. de lithotomiâ, 4to. Heidelberg. 1710.

Neigefind (Goth.) de prostatis calculis affectis dissertatio, 4to. Lipsiæ, 1737. (Dict. des Sc. Méd. art, Calculs.)

Neisske (B. J.) Diss. sistens calculorum in corpore humano reperiundorum genesin et curam, 4to. Göttingen, 1737. (Med. Chir. Libr.)

Newman (J. W.) a short enquiry into the merit of solvents, so far as may be necessary to compare them with the operation of lithotomy, 8vo. 2nd ed. London, 1781.

Nicolai (E. A.) Gedanken von der erzeugung der steine in dem menschlichen körper, insonderheit in den nieren, der blase, &c. Hallæ, 1749.

Nitschius (E. G.) Disp. de calculo renum, Leidæ, 1700.

Nonnius, Diss. de calculorum curatione diureticorum usu, 12mo. Lugd. Bat. 1638.

Observations and Enquiries (the Medical) by a Society of Physicians in London, 8vo. 6 vols. 1763-84—Account of a *prolapsus uteri et vesicæ*, with a stone in the bladder, T. White, III, 1—An encysted tumour in the scrotum, which took its origin from the urethra, and contained a great number of calculous concretions as well as urine, J. Else, V, 336.

Observations on the wood called *Lignum Nephriticum*, imported from Hispaniola, shewing its virtues in dissolving the stone in the reins and bladder, &c. written by a country Dr. to the Præses Coll. Med. 4to. Lond. 1794. (Med. Chir. Libr.)

Oehme, (F. T.) observatio eines durch 22 Jahr lang in der harnröhre getragnen, und mit apparatu minori ausgeschnittenen Steins, 8vo. Warschau, 1773.

Olivier (S.) Traité des maladies des reins et de la vessie, contenant la cure et la préservation de la pierre et de la gravelle, 8vo. Rouen, 1631.

Ollivier, (C. P.) cfr. Scarpa.

Onderdonk (H. U.) Diss. on stone in the bladder, 8vo. New York, 1810.

Oostryk (— von) Diss. de calculo vesicæ, Ultraject. 1672.

Ott (J. M.) Dissertatio, historiam renis sinistri, maximè tumidi atque corrupti (cum calculo) in cadavere humano reperti, pandens et explicans, Basil. 1719.

Otto, Diss. de calculo renum, præside Meibomio, Helmstadt. 1679. (Sandifort Obs. Anat. Path. I, 92.)

Pagliarucci (N.) Disp. de calculo, Vienn. 1768.

Pallas (A. F.) de variis calculos secandi methodis, 4to. Lugd. Bat. 1754. (Halleri Disp. Chir. IV, 267.)

Pallucci (N. J.) Nouvelles rémarques sur la lithotomie, suivies de plusieurs observations sur la séparation du penis et sur l'amputation, &c. 12mo. Paris, 1750.

—— Lithotomie nouvellement perfectionnée, avec quelques essais sur la pierre, et sur les moyens d'en empêcher la formation, 8vo. Vienne, 1757.

—— Lettre à M. d'Humelauer, sur la cure de la pierre, 8vo. Vienne, 1764. (Libr. of R. C. S. L.)

—— Réponse à la lettre de M. Cainbon, touchant la méthode de Frère Côme, 8vo. Vienne, 1765. (Bibl. Baldingeri.)

Pansa (M.) Consilium antinephriticum, Leipzig, 1615.

Panthot, Ergo calculo succus limouum, Monsp. 1653. (Ploucquet.)

Panthot (J.) Dissertation instructive et très-curieuse pour la pratique de trois opérations de la pierre, faites en six mois de temps, 4to. Lyons, 1702.

Panthonus (L.) de usu turundarum post extractionem calculi, Basil, 1628. (Portal.)

Paris (J.) della litotomia più facile e più sicura, 4to. Venezia, 1728.

Parkinson (James) Observations on the nature and cure of gout, on the nodes of the joints, and on the influence of certain articles of diet in gout, rheumatism, and gravel, 8vo. Lond. 1805. (Med. Chir. Libr.)

Parsons (A.) de calculo renum et vesicæ, 4to. Hardw. 1678. (Watts Bibl. Brit.)

Parsons (J.) Description of the human urinary bladder, with animadversions on lithontriptic medicines, particularly those of Mrs. Stephens, 8vo. London, 1742.

Pattison (G. S.) Experimental observations on lithotomy, with the description of a fascia of the prostate gland, which appears to explain anatomically the cause of urinary infiltrations and consequent death, 8vo. Philadelphia, 1820.

Paulli, Diss. de renum et vesicæ calculo, Rostoch. 1601.

Paunciforte (N.) Disp. de renum et vesicæ calculo, Utrecht, 1690.

Penadi, Storia di una rara formazione di calcoli, 1819.

Petzold (J.) Epistola de Palma Christi, et an diuretica calculis conveniant, folio, Francof. 1598.

Percy and Chaussier, Report made to the Institute of France, on a memoir presented by M. Civiale, entitled a new method of destroying the stone in the bladder without operation of lithotomy, trans. by R. Roche, Philadelphia, 1824.

Perry (S.) A disquisition on the stone aud gravel, with strictures on the gout when combined with those disorders, 12mo. 5th ed. London, 1785.

Petit (J. L.) Traité des Maladies Chirurgicales et des Opérations qui leur conviennent, 8vo. 3 tom. Paris, 1790—De la hernie de vessie, ou kystiocele, II, 362.

Pfæhler (J. G.) Disp. de calculis vesicæ urinariæ cysticis, Argentorat. 1774.

Piebers (B.) geluklig steenkonst den steen te snyden end nytdryven sonderpyn, 8vo. 1671. (Ploucquet Lit. Med. Digest. I, 200.)

Pietrus (N.) Diss. "An ad extrahendum calculum dissecanda ad pubem vesica?" Paris, 1635. (Cfr. Douglas (John), and also Cheselden)

Pilling (J. S.) Diss. de urinâ cretaceâ, Lipsiæ, 1761. (Sandifort Thes. Diss. I, 519.)

Pineau (S.) Discours touchant l'invention et l'extraction de la pierre de la vessie, 8vo. Paris, 1610.

Pitcairne (O.) a treatise on the stone, wherein Mrs. Stephens' medicines are set forth at large, and undeniably proved from abundance of cases to be a proper solvent for the stone, 8vo. London, 1739.

Placcius (J.) Disp. de tartaro renum, Rostoch, 1636.

Platerus, Diss. de lithiasi των νεφρων, Basil. 1582. (Ploucquet.)

Platner (E.) Historia literario-chirurgica lithotomiæ mulierum, 4to. Lipsiæ, 1770.

Platner (J. Z.) Diss. de calculo ad vesicam adhærente, 4to. Lipsiæ, 1737.

Platner, cfr. Sammlung.

Ploucquet et Rudiger, Disp. de præstantiâ cystotomiæ Celsianæ, Tubing. 1808. (Bernstein Handb. der Wundartz. App. 260.)

Plunket, Diss. de Lithotomia, Edinburgh.

Pohlius (J. C.) Diss. de prostatis calculo adfectis, 4to. Lipsiæ, 1737.

Poissonier (P. J.) Disp. "An educendo calculo, ceteris anteferendus apparatus lateralis?" Parisiis, 1744. (Halleri Disp. Chir. IV, 195.)

Polisius, Diss. de calculo renum, Francof. 1648.

Poppius (J.) von der wassersucht und deren zufallen, der steinkrankheit, des sandes, grieses, lenden- und blasenstein, &c. 8vo. Coburg. 1623.

Pouteau (M. C.) Mélanges de chirurgie, 8vo. Paris, 1760—Sur l'opération de la taille, 197—Sur une fève d'haricot qui servoit de noyau à un calcul de la vessie urinaire, 293—Observation sur la nephrotomie, 456—Déscription d'un lithotome double pour l'opération de la taille chez les femmes, 517.

—— Œuvres posthumes, 8vo. 3 tom. Paris, 1783—Mémoire sur les jours de taille, c'est à dire, sur l'usage où l'on est dans quelques Hôpitaux, de faire dans la même matinée l'opération de la taille aux plus grand nombre de malades qu'on a pu rassembler, III, 213—Fève d'haricot, noyau à un calcul, 290—Sur l'opération de la taille, 294—Réflexions sur l'incontinence de l'urine après l'opération de la taille, 312.

Pouteau (Fils) La taille au niveau, mémoire sur la lithotomie par l'appareil latéral, circonstances et dépendances, avec addition de quelques nouveaux instruments pour cette opération, 4to. Avignon, 1765.

Prades (C. de) et E. Charrier, Diss. "En vesicæ calculo κυστοτομιη," Paris, 1657. (Ploucquet Lit. Med. Digest. I, 200.)

Pré (J. F. du) Nephritidis pathologia et therapeia. Erford. 1725.

—— de calculo microcosmi, Erford. 1726.

Preval (G. de) Quæst. med. "An extrahendum calculum dessecanda ad pubem vesica?" Paris, 1752. (Halleri Disp. Chir. IV, 148.)

Prevallée (J. B. L. R.) Diss. sur les affections calculeuses de la vessie, 4to. Paris, 1805.

Prevost (Jean) de lithotomiâ, seu calculi vesicæ sectione, consultatio, 4to. Ulm. 1618.

Prinsterer (— van) Diss. nonnulla, calculorum genesin, naturam, et cum tophis podagricis convenientiam, spectantia, Lugd. Bat. 1788.

Proebisch (W. H.) Von der operation der steinschneidens über dem *os pubis*, 4to. Königsb. 1727.

Prout (Wm.) An inquiry into the nature and treatment of gravel, calculus, and other diseases connected with a deranged operation of the urinary organs, 8vo. London, 1821.

—— Synoptical view of urinary calculi, and the laws of their formation, 8vo. (Libr. of R. C. S. L.)

—— Traité de la gravelle, du calcul vésical, et des autres maladies qui se rattachent à un dérangement des fonctions des organes urinaires, traduit de l'anglais avec des notes, par Morgue, Paris, 8vo. 1823.

Quer (D. J.) Diss. fisico-botanica sobre la pacion nefritica y su verdadero specifico la *uva ursi* o gayubas, Madrid, 1763. (Vig. v. Creutzenf.)

Quer's phys. und botan. abh. von nierenstein und die bärentraube, aus der Span. 8vo. Nürenb. 1772. (Ersch Lit. der Med.)

Rabineau (G.) Disp. "Non ergo in calculi curatione catharticis miscenda diuretica," 4to. Paris, 1586.

Rameau (Joseph) Analyse de la dissertation de M. Morand sur la taille au haut appareil, 8vo. Amst. 1729.

Ramelovius (M.) Beschreibung des nierensteins, 8vo. Lipsiæ, 1679.

Ranby (J.) Narration of the last illness of the Earl of Orford (who died of stone) with an appendix, 8vo. London, 1745.

Raw, cfr. Albini Index, also Denys.

Recorder (The American Medical) by J. Eberle, 8vo. 2 vols. Philadelphia, 1818-9—Calculi removed without cutting, A. Cooper, I, 293—Dr. Physic's improvement in the gorget, II, 406.

Records and Researches (The Medical), 8vo. London, 1831—A singular case of lithotomy, the stone *in perineo*, by R. B. Cheston, 163.

Rectorius (L.) Tractatus de lapidis renum ac vesicæ affectûs curatione, 4to. Florentæ, 1666.

Recueil d'Expériences et d'Observations sur la pierre, et en particulier sur les effets des remèdes de Mle. Stephens pour dissoudre la pierre,

2 tom. Paris, 1740-3.

Récueil Périodique de la Société de Médecine de Paris, 68 tom. 1795-1819—Rapport sur " le traité historique et dogmatique de l'opération de la taille" de Deschamps, III, 111—Observation sur la taille chez une femme, IV, 75—Résultat d'une mémoire sur l'urine du chéval, par Fourcroy, 317—Avis aux médecins, chirurgiens et naturalistes, pour envoyer les caculs urinaires, par Fourcroy et Vauqueliu, 495—Réflexions sur la mémoire de George Pearson (dans les Trans. Philosophiques 1798) sur la nature des concrétions urinaires, par Fourcroy, V, 97—De la nature des concrétions urinaires, 106—Epanchement de sang dans la vessie à la suite de la taille, 158—Noyaux de pierres extraits de la vessie. VI, 78—Collection d'urine dans le rein, occasionnée par la presence des grosses pierres, M. Guinot, 81—Lithotomie sous-pubienne, le calcul trop gros, l'opération au haut appareil, extraction d'un calcul de 31 oz. 2 gros, mort après 5 jours, M. Déguise, VII, 423—Aiguille de matelassier, avec incrustation calculeuse, extraite du canal de l'urètre aprés un séjour de 2½ ans, par Thomas, VIII, 216—Calcul très-considérable trouvé dans un rein monstrueux d'un individu qui n'avait jamais eu de colique néphrétique, XII, 195—Moyen d'arrêter l'hæmorrhagie après l'opération de la taille, 366—Débris de fœtus sortis par le rectum, ou servant de noyaux à des calculs urinaires, XIII, 73—Lithotomie dans l'Hopital de Luneville, 1629 opérés, 147 morts, par Saucerotte, 271—Calcul de 31 oz. extrait de la vessie, par Déguise, XIV, 422—Rapport sur l'observation précédente, par Allan, 435—Observations sur quelques instrumens relatifs à la lithotomie, par St. Rome, XVIII, 464—Contre-ouverture à la vessie, au-dessus du pubis, pour l'extraction de la pierre par l'appareil latéral, M. Sernin, XX, 401—De l'union de lithotomie du frère Côme au catheter conducteur de M. Guérin dans la taille latéralisée, par M. Ferrier, 23—Notice de Baseilhac, Traité de la taille, XXI, 221—Nouveau méthode de lithotomie, incision transversale du périnée, M. Morland, XXV, 236—Obs. sur les bons effets des bains de Genièvre dans la lithiase des enfans, par Demangeon, XXVI, 378—Sur l'analyse chimique des calculs, 436—Usage de la bousserole contre la pierre, XXVII, 249—Historia calculi per hypogastrium e vesicâ prorepti, curante Caumond, 353—Rapport sur cette observation, par Deschamps, 360—Nouvelle manière de faire l'opération de la lithotomie par l'appareil latéral, par Debret, XXIX, 302—Rapport sur ce mémoire, par Deschamps, 312—Notions générales sur les concrétions, ou calculs des animaux, par De Lens, XLV, 3—Rapport sur ce mémoire, 129.

Register (The American Medical and Philosophical) 4 vols. 1814, &c.—Review of Onderdonk's Diss. on stone in the bladder, I, 394.

Regius (Z.) Disp. de calculo renum et vesicæ, Leidæ, 1676.

Reichel (A. T.) Sichere und bewährte mittel wider den stein, 4to. Erfurt. 1745.

Reichel (J. D.) Observationes de calculis renalibus, 4to. Lipsiæ, 1772.

Répertoire Général d'Anatomie et de Physiologie Pathologiques, 4to. 8 tom. Paris, 1826-30—L'opération de la taille à l'Hôtel Dieu, I, 82—Quatrième mémoire de V. Berlinghieri sur la taille recto-vésicale, 98—Taille comparative à l'Hôtel Dieu, 215—Appareil proposé par M. Robinet pour servir à dissoudre les calculs dans la vessie urinaire, 247—Royer Collard de la lithontriptie à l'Hôtel Dieu, 236—Extraction d'une portion de sonde d'argent, engagée dans la vessie et occupant une partie de l'urètre, IV, 179—Nouvelle méthode pour extraire la pierre de la vessie par l'hypogastre, M. A. Vernière, V, 192.

Reporter, The Midland Medical and Surgical, 8vo. 2 vols. Worcester, 1828-31—Lithotomy by Mr. Fletcher, I, 202—Do. by Key's method with a straight staff, 442—Calculi removed by dilatation from females, 442.

Repository, The New York Medical, 12 vols. 1804-9—A pin swallowed by a female, and fif-

teen months after removed from the urethra, covered with calculous matter, J. J. Jones, XI, 230.

—— The London Medical and Surgical, 8vo. 23 vols. 1814-25—On urinary calculi, W. Brande, I, 168-255—Do. on magnesia in calculous complaints, II, 17—Robiquet on intestinal calculi, their similarity to urinary, 425—Galvanism a solvent of urinary calculi, III, 342—Brande's analysis of urine, 429—Observations on detecting stone in the bladder, with description of an improved sound, J. Barlow, V, 105—G. Lusac on uric acid, 161—Case of wound of the bladder, in which an extraneous substance lodged in it was voided by urine, J. Hennen, 283—Lithotomy, the stone adherent, M. Mabey, 475—Bullet extracted from the bladder. G. J. Guthrie, 260—Brande on the bad effects of the incautious use of magnesia, VI, 244—Urinary calculus of carbonate of lime dissolved by injecting muriatic acid, 431—Calculus in the vagina of a child, H. Cole, with its analysis by the editors, VII, 109—Lithocele, or calculi in the scrotum, removed, 168—Delpech on urinary calculi, 225—Analysis of a calculus from the bladder of a dog, IX, 44—Retention of urine from a calculus lodging behind a stricture of the urethra, L. Cloquet, X, 154—Two cases of lithotomy in females, M. Clemot, XI, 281—W. Brande on the medico-chymical treatment of calculous disorders, 140-230-313—Review of Carpue "on high operation," XII, 314-XIII, 28-141—Reflections on hypogastric lithotomy, M. Souberbielle, 57 High operation in London in 1772-89—Calculus of extraordinary volume found in the left kidney, by Dr. Forestier, 252—Memoir on vaginal lithotomy, by Dr. Coze, 342—Description of an urinary calculus composed of the lithate of ammonia, by Dr. Prout, XIV, 77—A mode suggested for passing calculi from the bladder by the aid of atmospheric pressure, 398—Sanson's recto-vesical operation of lithotomy, 421—Calculi cut from the prostate gland, by M. Dupuytren, 423—Review of Arnott on the extraction of stone from the male bladder without cutting, by the dilator, &c. XV, 145—A case exhibiting the beneficial effects of magnesia in a calculous complaint, 292—Review of Dr. Prout's "Inquiry into the nature and treatment of gravel, calculus, &c." 398—Dr. Wilson Philip on the formation of lithic acid, 477—Reply to Dr. Yelloly's remarks on the estimate of mortality from lithotomy, by Dr. Prout, XVI, 78—Observations on Dr. Prout's estimate of mortality from the operation of lithotomy, by Dr. Yelloly, 151—Wilson on calculous concretions, XVII, 53—Calculi extracted by Sir A. Cooper, 69—A case of lithotomy in the female, shewing the effects of the pad recommended by the late Mr. Hey, 363—Large human calculus, 524—Calculus in the ureter, XIX, 41—Sir A. Cooper's improvements in treating calculous disorders, 112—M. Camoin on lithotomy by the rectum, 112—Case wherein an urinary calculus was extracted through a fistulous opening in the abdominal parietes, XXI, 43—Cases in which calculi were evacuated at the umbilicus, J. Dixon, 291—Review of Key on lithotomy, XXII, 32—Case of hæmorrhage into the urinary bladder, proceeding from fungoid tumours of the prostate gland, and requiring the performance of the high operation for the removal of coagula, by A. C. Hutchinson, XXII, 128.

——— New Series, 8vo. 6 vols. 1825-8—Large calculus extracted from the female bladder by dilatation, I, 364—High operation by A. C. Hutchinson, 559—Lithotomy with a straight staff, by Mr. Averill, II, 89—Lateral operation fatal from hæmorrhage, J. Shaw, 264—Lithotomy by rectum, V. Berlinghieri, 469—Proposed improvement of the lithotome caché, 473—Lithotomy by Prof. Sisco, 526—Death from exhausted irritability after lithotomy, III, 293—Eight calculi in the urethra, extracted by forceps with a sheath, by M. Legalas, 348—Claims to invention of lithontriptic instruments, 457—A bean the nucleus of a calculus, IV, 428—Calculi in the vesiculæ seminales, 458—Rectal lithotomy in India, by simple instruments, V, 107—M. Meyrien's lithotomyleur for destroying calculus of the bladder,

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Review, The London Medical, by a Society of Physicians and Surgeons, 8vo. 8 vols. 1799-1802—A singular case of lithotomy, by R. B. Cheston, I, 20—An account of the lithontriptic power observed in the muriatic acid, II, 113—On the antinephritic qualities of the peach leaf, R. White, IV, 81—Operations for stone in Hospital Lunéville, (1629 cases in 40 years,) 151—Remarks on lithotomy with the concealed bistoury, by Sabatier, 158—Walter on stone in the kidneys and bladder, VI, 392.

—— Medical and Chirurgical, 8vo. 15 vols. London 1795-1807—Cold water to the loins in calculous cases, I, 47—Ischuria, urine vomited and much gravel (Dr. Senter's case and an imposition?) I, 49—Stone in the kidney extracted through an abscess in the back, IV, 313—Cheston's case of lithotomy, V, 522—Diagnosis between stone and disease of the bladder, VI, 261—Filing away stone in the bladder, 269—Lithontriptic power of muriatic acid, 304—Stone in the kidney affecting the urinary bladder, VII, 65—Lime-water against urinary calculi, IX, 150—Guérin's new instrument for lithotomy, 364—Renal and urinary calculi, XII, 49-50—Position of the patient in lithotomy, 307—Lithontriptic power of muriatic acid in lithiasis and icterus calculosus, 313—Review of John Bell on lithotomy, XIII, 99—Johnston on gravel and stone, XIV, 159—Egan on calculous affections, 165—Peile on an improved method of performing lithotomy, 265—Stone in the urethra of a boy removed by suction, 47—Henry de acido urico, XV, 330—Calculus discharged through an abscess in the hypogastric region, 10.

—— The London Medical, 8vo. 5 vols. 1808-1812, (continuation of the preceding)—Review of Thomson on lithotomy, with a description of T. Blizard's lithotome, A. Cooper's beaked scalpel, and Gibson's curved knife, I, 256—Rev. of Allan on lithotomy, II, 4—Do. of Trye on do. IV, 193—Lithotomy in a female, stone very large, death on 5th day *without any evident cause*, 286.

—— (The Medico-chirurgical, quarterly,) by Dr. James Johnson, Analytical Series, 8vo. 4 vols. London, 1820-4—Review of C. Bell on diseases of the urethra, bladder, prostate, &c. I, 272—Observations on the nature and treatment of the calculous diathesis, by W. Philip, 623—Review of Arnott "on extracting the stone from the male bladder without cutting, by the dilator, with an account of improvements of the method of dissolving stone by injection, and of the common operations of lithotomy," 743—Review of Osborne "on the pathology of urine," II, 41—Do. of Prout "on the nature and treatment of gravel, calculus," &c. 89—Do. of V. Berlinghieri on lithotomy by the rectum, 337—Calculi removed through the urethra, 875—Martineau on lithotomy, 877—Barlow on lithotomy, III, 64—Review of Wilson "on diseases of the urinary organs," 260—Do. of Bingham "on diseases of the bladder," 767—Dr. Chapman on lithontriptics, IV, 75—On removal of calculi from the female bladder by dilatation, Sir A. Cooper, 193—Large coagulum of blood removed from the bladder by means of a syringe, L. Byron, 316—Review of Howship "on diseases of the urinary organs," 369—Kerrison on dilatation of the male urethra by inflation, for extraction of calculi from the bladder, practised in Egypt near 250 years ago, 802.———The Medico-chirurgical, quarterly, New Series, by Dr. J. Johnson and H. J. Johnson, 8vo. 22 vols. 1824-35—Review of Key on lithotomy, I, 207—Dissolution of calculi by galvanism, 223—Civiale's lithontriptor or stone-destroyer, 472—High operation for hæmorrhage into the bladder, II, 224—Recto-vesical lithotomy, 473—Liston on lithotomy, III, 247—Averill's case of do. 539—Shaw's case of lithotomy with

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phlebitis, death—*high operation*, extravasation of urine, death—*bilateral do.* difficulty in extraction of stone, recovery—extraord. tendency to the formation of calculi, 5 operations by lithotomy or lithotrity in 6 years—*lithotomy*, 2 operations, perinæal fistula with calculus, cure—*lithotrity*, urethra irritable, 3 séances, cure—*do.* and 5 séances, cure—*do.* inflammation of the bladder, death—*do.* the attempt unsuccessful, death on the fourth day—*do.* forbidden by excessive irritability of the urinary passages—*do.* abscess in the prostate, 6 séances, cure—*do.* 3 séances ineffectual, lithotomy, death—*do.* 3 séances, impaction of a fragment in the urethra, death—*do.* unsuccessful, recto-vesical fistula, lithotomy, cure—*do.* 10 séances, cure—*do.* impracticable in consequence of flattened shape of the calculus—*do. do.* lithotomy, death, 192-204.

—— The Medical Quarterly, 8vo. 3 vols. London, 1833-5—Rev. of Sir B. Brodie's "lectures on diseases of the urinary organs," 297—Keith and Liston on lithotrity, 338—Lithotomy by the high operation, scarlet fever supervening, with remarks, by C. Aston Key, 338—Lithotomy by the rectum, Mr. Dawson, II, 357—Rev. of Prof. Guthrie "on the anatomy and diseases of the neck of the bladder," III, 1—Hydatids of the kidney passed by the urethra, 224.

Rex (S.) Specimen lithogenesiæ humanæ, 12mo. Bern. 1689.

Reynolds (J.) Diss. de calculo urinario et lithontripticis, 8vo. Edinb. 1788.

Rheineck's med. und chir. beobachtungen über die einfache methode des seitenblasensteinschnitts, mit Mursinna's vorrede, 8vo. Berlin, 1815.

Riberi, ragguaglio di tredici cistotomie, Torino, 1822.

Richter (J.) de nephritide, Basil, 1597.

Rigal (J. J. A.) de la destruction mécanique de la pierre dans la vessie, ou considérations nouvelles sur la lithotritie, 8vo. Paris, 1829.

Rigault (S.) et A. Roussel, disp. "ergo renum calculo nephrotomia," Paris, 1602. (Ploucquet Lit. Med. Digest. I, 204.)

Rietmaker (H. A.) tractatus de nephritico dolore, in quo essentia, differentiæ, causæ, signa et curatio calculi et arenularum explanantur, 4to. Lovan. 1662. (Libr. of R. C. S. L.)

Rimpeau, Diss. de lithiasi, Ultraj. 1700.

Rittler (A. G.) Commentatio de methodo lithontripticâ, seu de ratione calculum removendi sine operatione cruentâ, 4to. Jenæ, 1824. (Libr. of R. C. S. L.)

Robinson (N.) Compleat treatise on the gravel and stone, wherein all their symptoms, causes and cures are mechanically accounted for; with arguments in defence of the possibility of dissolving the stone in the bladder, and a dissertation upon the operation of nephrotomy, 8vo. 3rd edition, London, 1734.

Rolfink (G.) Diss. de renum et vesicæ calculo, 4to. Jenæ, 1644.

—— de genuinâ calculorum in corpore humano, præcipuè renibus et vesicâ, generatione, signis, remediis, 4to. Jenæ, 1663.

Romann (J.) Disp. de renum et vesicæ affectu calculoso, Leid. 1689.

Romano (A. T.) Memoria d'un' operazione di litotomia digna di particolare considerazione, 4to. Roma, 1822.

Roode (M. de) Disp. med. de lithiasi, 4to. Lugd. Bat. 1720. (Med. Chir. Libr.)

Rosa (C. L.) Diss. de calculo vesicæ, 8vo. Argentorati, 1723.

Rosewing, Diss. de lithogenesiâ ex animalibus, Hafn. 1707. (Ploucquet.)

Rossetus (Francis) Υστεροτομοτοκίας, id est Cæsarei partûs assertio historiologica, 8vo. Parisiis, 1590. (Ext. in Spachii Gynæcia. Cfr. Douglas, and Cheselden.)

Rouly (L.) Diss. de singulari renis calculo, Argentor. 1772.

Roussin de Montabourg, "Ergo ad extrahendum calculum dissecanda ad pubem vesica," folio, Paris, 1768. (Dict. des Sc. Med.)

Rudtorffers (F. X.) Abhandlung über die operation des blasensteins nach Pajola's methode, 4to. Leipzig, 1808.

Ruelen (C. H.) vom nieren- und blasen-stein, auch podagra. Stargard, 1690. (Ploucquet.)

Rufi Ephesii, περὶ τῶν ἐν κύστει καὶ νεφροῖς παθῶν, (A.D. 1554,) 4to. Londini, 1726.

Russell (W.) A discourse concerning stone in the bladder, 12mo. London, 1691. (Watts' Bibl. Brit.)

Rutty (Wm.) Treatise of the urinary passages, with the principal distempers that affect them, particularly the stone of the kidneys and bladder, 4to. London, 1726.

Rutty (Jno.) An account of some new experiments on Mrs. Stevens' medicines, with Dr. Jurins' case, and remarks on Dr. Hales' experiments, 8vo. London, 1742.

Ryck (A.) Diss. de calculo renum et vesicæ, Leid. 1644.

Ryff, (G. H.) Bewährte cur des steins und gries in urinblasen und lenden, auch gründlicher bericht den stein zu schneiden, 4to. Würzburg, 1543.

Salmasius (C.) Interpretatio Hippocratis aphorismorum, de calculis, additæ sunt epistolæ duæ J. Beverovicii, quibus respondetur, Lugd. Batav. 1648.

Sammlung auserlesener zur geschichte und ausübung des Blasensteinschnitts gehöriger Abhandlungen—*J. G. Günz*, chirurgische beobachtungen über die von Foubert, Garengeot, Perchet, le Dran und le Cat erfundenen methoden des blasensteinschnitts—*Maret*, über die vortheile des blasensteinschnitts in zween verschiedenen zeiträumen—*P. Camper*, über den blasensteinschnitts in zween verschiedenen zeiträumen—*P. Faguer*, von den vorzügeu der Hawkinsischen methode des blasensteinschnitts—*P. J. Desault*, von dem blasensteine, und dem herausziehen desselben mittelst des verbesserten Hawkinsischen instruments—*J. S. Hausmauns* beurtheilung der Hawkinsischen methode den blasenstein zu operiren—*E. Platners* literargeschichte des blasensteinschnitts bey Frauenspersonen—*F. Come*, über seine neue methode den blasenstein über den schaambeinen zu operiren, 8vo. Leipzig. 1784.

Sandifort (E.) Obs. Anatomico-pathologicæ, 4to. 4 tom. Lugd. Bat. 1771-81—De calculo renali, I, 86—De lethali urinæ suppressione ex calculo urethræ impacto, indeque nata duplici hujus canalis fissura, II, 157—De calculis renum et vesicæ, IV, 69—De calculis per perinæum sibi viam quærentibus, 128.

—— Exercitationes Academicæ, 4to. 2 tom. Lugd. Bat. 1783-5—De ischuria lethali, II, 109—De calculis duobus rarioris figuræ, 123.

Sanson (L. J.) des moyens de parvenir à la vessie par le rectum, avantages et inconvéniens attachés à cette méthode pour tirer les pierres de la vessie, avec des observations à l'appui, 4to. Paris, 1817.

—— des moyens de parvenir à la vessie par le rectum, avantages et inconvéniens de cette méthode pour tirer les pierres de la vessie; suivis d'un mémoire sur la méthode d'extraire la pierre de la vessie urinaire par la voie de l'intestin rectum, par A. Vaccá Berlinghieri, traduit de l'italien par L. J. E. Blaquière, 8vo. Paris, 1821.

Sanson et Vaccá Berlinghieri, cfr. Cerutti.

Sauberts (J.) Innocentia calculi et podagræ sermone publico asserta, Noriberg, 1637. (Ploucquet.)

Saucerotte (C.) Histoire abregée de la lithotomie, 8vo. Nanci, 1790.

Sault (F.) Dissertations sur la pierre des reins et de la vessie, avec une réponse aux critiques de M. Astruc, 8vo. Paris, 1736. (Portal Hist. de l'Anat. V, 120.)

Saunders (W.) Observations and experiments on the power of the mephitic acid in dissolving stones in the bladder, 8vo. London, 1777. (Watts' Bibl. Brit.)

Savin (P. H.) Considerations sur les pierres rénales et la néphrite calculeuse, 4to. Paris, 1715.

Scarabicius (S.) Hist. bovini cerebri in lapidem mutati, et de lapidis concretione in homine, 12mo. Patav. 1665.

Scarpa (Antonio) Memoria sul conduttore tagliente d'Hawkins per l'estrazione della pietra

dalla vescica, 4to. Pavia, 1825. (Ext. in Opusc. di Chir. I, 31.)

—— Memoria sul taglio ipogastrico per l'estrazione della pietra, &c. 4to. Milan, 1820. (Ibid. I, 55.)

—— Saggio di osservazioni sul taglio retto-vescicale, 4to. Pavia, 1823. (Ibid. I, 77.)

—— Esame della terza memoria del prof. Vaccá sul taglio retto-vescicale, 4to. Milan, 1824. (Ibid, I, 117.)

—— Memoir on the cutting gorget of Hawkins, containing an account of the improvement of that instrument, and remarks on the lateral operation for stone, trans. by J. Briggs, 8vo. London, 1816.

—— Traité de l'opération de la taille, traduit par C. P. Ollivier, avec des additions, et un mémoire du traducteur sur la *taille bilatérale*, &c. 8vo. Paris, 1826. (It contains all the preceding works of Scarpa.)

Schacher (P. G.) de Thermarum Carolinarum usu in calculo renum et vesicæ, Lipsiæ, 1711.

Schade (A. A.) Disp. de nephritide calculosâ, Traject. 1761.

Schævius, diss. de calculo renum, Jenæ, 1650.

Schäller (W.) de nephritide, Witteberg. 1621.

Schaumkell (E. W.) Diss. de calculo vesicæ friabili, Rostochii, 1729. (Halleri Disp. Chir. IV, 355.)

Schefferus (S.) Diss. de calculo, Basil, 1620.

Scheffel (C. S.) et H. B. L. Lembke, Disp. de calculo renali, 4to. Griefswald, 1742.

Scheid, Diss. de calculo vesicæ, Argent. 1713. (Voigtel.)

Scheler (P. P.) de sectione et felici curatione calculi vesicæ exulceratæ, Jenæ, 1738. (Halleri Disp. Chir. IV, 33.)

Schenkius (E.) de calculo, Jenæ, 1619.

Schenkius (J. G.) lithogenesia, sive de microcosmi membris petrefactis, et de calculis eidem microcosmo per varias matrices innatis, 4to. Francof. 1608. (Portal, Hist. de l'Anat.)

Scherbius (C.) Disp. de renum calculo, Utrecht, 1669.

Scherer (A. N.) die neuesten untersuchungen über die mischung der blasenstein, 8vo. Jenæ, 1800.

Schlegel (P. M.) Diss. de calculo renum et vesicæ, 4to. Jenæ, 1638.

Schmidt (G. C.) Disp. de calculo renum et vesicæ, Moguntiæ, 1752.

Schmutzer (M. R.) Methodus curandi calculum, Nürnb. 1640.

Schneider (C. V.) de renum et vesicæ calculo, Witteberg, 1665.

Schobinger (B.) Λιθολογια medica, Basil, 1637.

Schœffer (J. J.) Diss. de variis lithotomiæ generibus, Wurtemberg, 1724. (Libr. of R. C. S. L.)

Schœffers (J. H.) historische erzählung von einem stein aus einer wasserfüchtigen person geschnitten, 8vo. Nürnberg, 1663.

Schœnerus, Diss. de calculo renum et vesicæ, Gryphisw. 1633.

Scholtz (D.) Disp. de calculo renum et vesicæ, Hadervic. 1707.

Schreiber (J. F.) Epistola ad A. von Haller, de medicamento a Joannâ Stephens contra calculum divulgato, inefficaci et noxio, Götting. 1744. (Halleri Disp. Chir. V, 431.)

Schroeder (P. G.) et P. W. Rupp, Disp. de cognatione inter arthritidem et calculum, Götting. 1767.

Schroeter (J. F.) Diss. de calculo renum et vesicæ urinariæ, Jenæ, 1683.

Schüler, de antiquitate lithotomiæ, 8vo, Hallæ, 1797.

Schultens (G. R.) Disp. de caussis imminutæ in republica Batava morbi calculosi frequentiæ, 4to. Lugd. Bat. 1802.

Schulze (J. A.) Diss. med. chir. de calculis in locis inusitatis natis et per vias insolitas exclusis, Wittemb. 1741. (Halleri Disp. Chir. IV, 17.)

Schulze (J. H.) de lithiasi sinistro quam dextro reni magis infestâ, Halæ, 1738. (Blumenbach Hist. Med. Lit. 346.)

Schurig (M.) Lithologia historico-medica, seu calculi humani consideratio, effectus morbosi, symptomata, excretio, analysis, lithontriptica, &c.

4to. Dresdæ, 1744.

Scudamore (C.) Treatise on the nature and cure of gout and gravel, 8vo. 4th ed. Lond. 1823.

Sebisch (M.) Disp. medica de calculo renum, 4to. Strasburg. 1647.

Segner, Diss. calculorum in corpore humano reperiundorum genesis et cura, Goetting. 1737.

Seifert (P.) ueber die neue französische methode blasensteine ohne steinschnitt zu entfernen, 8vo. Griefswald, 1826.

Seip (P. L.) Diss. de lithiasi, Giess. 1665.

Seiler, Diss. cultorum ceratotomorum et cystidotomorum historia, Vittenbergæ, 1805. (Dict. des Sc. Med.)

Seilerus, Diss. de renum calculo, Basil. 1599.

Seligmanni ex portentosis calculis mortui memoria, 4to. Lipsiæ, 1708. (Ploucquet.)

Senac (J.) Discours sur la méthode de Franco, et sur celle de Raw, touchant l'opération de la taille, 12mo. Paris, 1727.

Senn (F. L.) Recherches sur les différentes méthodes de taille sous-pubienne, 4to. Paris, 1825.

Sennertus (D.) Disp. de calculo renum et vesicæ, Witteberg, 1611—Disp. altera de calculo, ibid. 1618.

Sermes (J.) een nieuwe wyze van steensnyden voorgesteld in een vorteeling van Douglas end Cheselden benevens de gedagten van Heister waar by eenige aanmerkingen voor de wyzen van steensnyden geoffend door Douglas en Rau, 8vo. Utrecht, 1726.

Sevasto, Disp. de lithogenesia, Lugd. Bat. 1749.

Shaw (W.) Dissertation on the stone in the bladder, 8vo. London, 1739. (Libr. of R. C. S. L.)

Shaw (P.) Inquiries into the nature of Miss Stephens's Medicines for the stone, 8vo. London, 1738. (Watts Bibl. Brit.)

—— Examination of the reasons for and against the subscription for a medicament for the stone, 8vo. London, 1738. (Ditto.)

Shirley (T.) of the causes of stones in the greater world, in order to find out the causes and cure of the stone in the kidney and bladder of men, London, 1672.

Siebold (C. G.) Diss. de vesicæ urinariæ calculo, 4to. Würzbourg. 1785.

—— Historia lithotomiæ in eodem homine bis factæ, cum ejus restitutione, 8vo. Würzbourg, 1778.

Sigismundus, Lithogenesiæ humanæ specimen, 8vo. 1689.

Simmons (W.) Cases and observations on lithotomy, including hints for the more ready and safe performance of the operation, &c. 8vo. Manchester, 1808.

Sinclair (P.) Disp. de calculo renum et vesicæ, Utrecht, 1703.

Sleigh (W. W.) An essay on an improved method of cutting for urinary calculi, or the posterior operation of lithotomy, 8vo. London, 1824.

Snaakenburg (P.) Disp. de renum et vesicæ affectibus, Leidæ, 1728. (Vigil v. Creutzenfeld.)

Snip (F.) Diss. de lithotomiâ sive calculi sectione, 8vo. Amsterdami, 1761.

Soemmering (S. T.) Progr. de curatione calculi, 4to. Mainz, 1791.

Sorand (F.) et J. Poisson, Disp. "Ergo calculus a caseo," Paris, 1687.

Souberbielle (J.) Considérations médico-chirurgicales sur les Maladies des voies urinaires, 4to. Paris, 1813.

Spacchius (J.) Diss. de vesicâ humanâ, ejusque præcipuo affectu, calculo, Argentor. 1595, (Schweichard Cat. Diss.)

Spectator, The Medical and Surgical, 8vo. 3 vols. London, 1808-9—On lithontriptics, I, 98—Review of Allan on lithotomy, 269—Barlow on the causes of calculus, II, 145—Obs. on lithotomy, W. Lawrence, III, 109.

Spinowski (C. C.) Disp. de calculo renum et vesicæ, Leid. 1682.

Springsfield (G. C.) Diss. de prærogativa thermarum Carolinarum in dissolvendo calculo vesicæ præ aquâ calcis vivæ, 4to. Witteberg. 1756.

Stahl (G. E.) Diss. de calculorum generatione, sive lithogenesi, Hallæ, 1699.

—— de novâ pathologiâ calculi renum, 4to. Hallæ, 1698.

Stanley (E.) An account of the mode of performing the lateral operation of lithotomy, 4to. London, 1829.

Stenii, Lithologia curiosa, Baruth. 1703. (Voigtel's Handb. der Path.)

Steinmann (J. A.) Disp. de causis cur frequentiùs viri præ fœminis calculosi fiunt, 4to. Argentor. 1750.

Stephens's (Mrs.) Receipts for the stone and gravel, with proper observations and explanations thereon, together with some hints concerning the preamble to the act of parliament on that subject, 8vo. London, 1739. Cfr. Coetlogon. (Med. Chir. Libr.)

Stetten (A.) Disp. de nephritide, Utrecht, 1740.

Stipoies, Diss. de naturâ et remediis calculi, 8vo. Tyrnan. 1775. (Ploucquet, Lit. Med. Digest. I, 193.)

Stockman, Diss. de renum et vesicæ calculo, Rostoch. 1646.

Storman (J.) Diss. de renum et vesicæ calculo, Leidæ, 1646.

Straselius (F.) Disp. de calculo renum et vesicæ, 4to. Lugd. Bat. 1659. (Norwich Med. Libr.)

Strum (J.) Diss. de renum et vesicæ calculo, Gryphisw. 1618.

Stupanus, Diss. de calculo renum et vesicæ, Basil. 1608.

Sulzberger (J. R.) Diss. de calculo renum et vesicæ, Lips. 1726.

Sydenham (Thos.) Diss. de febre, variolis, mictu sanguineo, et calculo, 8vo. Lond. 1682.

Sylvaticus (B.) de lithotomiâ, sive calculi sectione, 8vo. Lugduni, 1628.

Tabernarius (N.) de lapide, calculo et arenulis, 4to. Basil. 1608. (Ploucquet Lit. Med. Digest. I, 179.)

Tabot (N.) et S. Lafront, Disp. "Ergo in pube lithotomia," 4to. Parisiis, 1748.

Tanchou (S.) Nouvelle méthode pour détruire la pierre dans la vessie sans opération sanglante, précédée d'un examen historique et pratique de tous les procédés de lithotritie employés jusqu' à ce jour, 8vo. Paris, 1830.

Tarin (P.) Epistola de lithotomiâ, Parisiis, 1748. (Halleri Disp. Chir. IV, 91.)

Tattersall (G.) Diss. de calculi et podagræ nexu, 8vo. Edinb. 1791.

Teichmeyer (H. F.) Gedanken über die frage "Ob nicht der zarte mühlsteinstaub *(lapidum pulvis,)* den man täglich geniest, eine ursache vom stein und podagra seyn könne, 4to. Jena, 1728. (Ploucquet Lit. Med. Dig. I, 191.)

Ten cases of persons who have taken Mrs. Stephens' medicines for the stone, with experiments to illustrate them, (ascribed to Hartley,) 8vo. London, 1738.

Tennigs (W. F.) Specimen medico-chirurgicum, de operatione alti adparatûs, Regiomonti, 1723. (Halleri Disp. Chir. IV, 95.)

Tenzel (A.) Diss. de calculo renum et vesicæ, et aliis quibusdam quæsitis, Basil, 1614.

Textor (C.) über die ursache der nicht-auffindens der harnblasensteine in gemachten operation der lithotomie, 8vo. Würzb. 1817. (Ersch Lit. der Med. No. 4093.)

Thebaldus (H.) de calculi vesicæ sectione, Patavii, 1638.

Thiessen (G.) Obs. de calculo raræ magnitudinis à virgine per urethram spontè et feliciter excluso, 4to. Regiomont. 1741.

Thomasin (J. F.) Abhandlung über die herausziehen fremder körper aus wunden, mit beschreibung einer doppelten steinschneiders um bei weibliche geschlecht den stein aus der blase zu ziehen, von A. G. Lombard, aus des franz. 8vo. Strasburg, 1788. (Ersch Lit. der Med. No. 3112.)

Thomasius (J. N.) Diss. de calculo renum et vesicæ, Lipsiæ, 1643.

Thomson (John) Observations on lithotomy, being a republication of Dr. James Douglas' appendix to his history of the lateral operation for the stone, and of the other original papers relative to Mr. Cheselden's invention and improvement of that operation, to which is added a proposal for a new manner of cutting for the stone, 8vo. Edinb. 1808.

—— Appendix to a proposal for a new manner of cutting for the stone, containing an account of some cases operated on after that manner at the Royal Infirmary of Edinburgh, 8vo. Edinb. 1810.

Tileman (J.) de naturâ et curatione doloris nephritici, Marburg. 1644.

Timmius (J.) Einiger Engellaender und Frantzosen anmerkungen über den steinschnitt nach den Englischen apparatu, 8vo. Bremen, 1731.

Titius (S. C.) Analyseos calculorum humanorum et animalium chemicæ specimen, 4to. Lipsiæ, 1789. (Ersch Lit. der Med. No. 4074.)

Titschardus, Diss. de renum et vesicæ urinariæ calculis, Basil, 1610.

Titsing (A.) Heelkondige verhandelingen over de steen en steensnyden van F. Jaques uytgevonden, von Rau beschaaft, en door J. Denys verdonkert, 8vo. Amstel. 1731.

Tolet (F.) Traité de lithotomie, 12mo. Paris, 1681.

Touche (H. B. de la) A short account of the disease of the stone in the human body, also of the method of cure, 4to. London, 1764, (Watt's Bibl. Brit.)

Tranfel (J.) Disp. de nephritide, Leidæ, 1701.

Transactions (Medical) of the College of Physicians in London, 8vo. 6 vols. 1768-1820—Experiments on the solvent power of alkalies, T. Lane, I, 112—On human calculi, shewing them to be of very different kinds, II, 105—Observations on the nature and treatment of the calculous diathesis, A. W. Philip, VI, 172.

—— of the Royal Medical and Chirurgical Society of London, 8vo. 18 vols. 1812-33—Case of lithotomy with remarks, by T. Foster, I, 99—A case of artificial dilatation of the female urethra, by H. L. Thomas, 123—A case of lithotomy, with remarks on the effects of that operation, and on some cases of fistulæ in perinæo, by T. Chevalier, II, 201—History of a case, in which a calculus was voided from a tumour in the groin, T. Copeland, III, 191—Account of the chemical examination of the urine and serum of the blood of a person who had taken large quantities of soda, by J. Bostock, V, 80—Particulars of a case in which a very large calculus was removed from the urethra of a female without operation, with examples of analogous cases, by J. Yelloly, VI, 574—History of a case of lithotomy, with a few remarks on the best mode of making the incision in the lateral operation, by S. Cooper, VIII, 206—Three cases of calculi removed from the urethra without the use of cutting instruments, Sir A. Cooper, 427—Observations on the nature of some of the proximate principles of the urine, with a few remarks upon the means of preventing those diseases connected with a morbid condition of that fluid, by W. Prout, 526—On the comparative infrequency of urinary calculi among sea-faring people, by A. C. Hutchinson, IX, 443—On urinary and other morbid concretions, W. Henry, X, 125—History of a case of *nephritis calculosa*, in which the various periods and symptoms of the disease are strikingly illustrated; and an account of the operation of lithotomy, given by the patient himself, A. Marcet, 147—Description of an urinary calculus, composed of the lithate of ammonia, W. Prout, 389—A statistical inquiry into the frequency of stone in the bladder in Great Britain and Ireland, R. Smith, XI, 1—Case of lithotomy, C. Mayo, 55—Do. by W. B. Dickinson, 61—Remarks on the danger of extracting large calculi, with the description of an instrument intended to facilitate the breaking down stones of considerable magnitude, by H. Earle, 69—On renal calculi, by the same, 211—Case in which numerous calculi were extracted from the urinary bladder, without the employment of cutting instruments, Sir A. Cooper, 349—On lithotomy, by P. M. Martineau, 402—Account of a stone and of a portion of a catheter extracted from the female bladder by a dilator, by Sir A. Cooper, with an appendix by Mr. Chapman and Mr. Birt, on the removal of a catheter and of a stone from the female bladder by dilatation, XII, 235—On the dilatation of the male urethra by inflation, for the extraction

of calculi from the bladder, as practised in Egypt nearly 250 years ago, R. M. Kerrison, 315—Further account of the extraction of calculi from the bladder, without the use of any cutting instrument, by Sir A. Cooper, 381—Observations on the statement made by Dr. Douglas, of Cheselden's improved lateral operation of lithotomy, J. Yelloly, XV, 339—A further inquiry into the comparative infrequency of calculous diseases among sea-faring people, with some observations on their infrequency in Scotland, by A. C. Hutchinson, XVI, 94.

—— of the Medico-chirurgical Society of Edinburgh, 8vo. 3 vols. 1824-8—Calculus extracted from the female bladder by dilatation, R. Hamilton, II, 117—Do. by A. Ramsay. 122—Case of the high operation, in which unusual difficulty was experienced in the extraction of the stone, Sir G. Ballingall, 257—Urinary calculus lodged at the superior fundus of the bladder, J. Russell, 269.

—— of the College of Physicians of Philadelphia, 8vo. 1793—Account of the successful application of cold water to the lumbar region in calculous cases, by Dr. Rush—Singular case of dysuria, by Dr. Senter.

—— of a Society for the Improvement of Medical and Chirurgical Knowledge, 8vo. 3 vols. London, 1793-1812—On the effects of the pure fixt alkalies and of lime-water in several complaints, Gilbert Blane, II, 132—An account of some changes from disease in the composition of human urine, W. T. Brande, III, 187—On the effects of large doses of mild vegetable alkali, or *potassa carbonata*, in gravel, with remarks on its administration, particularly on the advantage of combining it with opium, Gilbert Blane, 338.

—— of the Medical and Physical Society of Calcutta, 8vo. 5 vols. Calcutta, 1825-31—A calculus found on dissection, adhering to the internal coat of the bladder (in a native,) so that the high operation only could have answered, I, 144—Recto-vesical lithotomy, by G. Waddell, IV, 221—Lithotomy *on the gripe* performed by a native, A. K. Lindesay, 440—On urinary calculi in natives in Bengal, by R. N. Barnard, V, 249—Cases of lithotomy on natives of India, by F. H. Brett, 260—Lithotomy on a Hindoo child, by A. K. Lindesay, 264—Do. on an Indo-Briton, by W. H. Spry, 270—Case of urinary calculus, and an analysis of some calculi from natives of India, by W. Twining, 273—Memorandum relating to lithotomy by a native, drawn up by G. King, 442—Note on lithotomy by a native, sent by J. Frith, 442.

—— (The Philosophical) of the Royal Society of London, 4to. 134 vols. 1665-1834—Account of a great number of stones found in one bladder, (A.D. 1667.) II, 482—A bullet that had been swallowed, voided afterwards with the urine, encrusted on its surface, III, 803—Experiments relating to the secretion of urine, (A.D. 1670.) V, 2083—Of stones in human bodies, C. Kirkby, VI, 2158—Stone in the bladder of a dog, VII, 4094—Thirty-eight stones found in one bladder, C. Kirkby, (A.D. 1673.) VIII, 6155—Calculi of an unusual size in a female, XII, 843—Production of stones in animals, F. Slare, (A.D. 1683-4.) XIV, 523—Account of two human calculi of unusual size and form, 523—Do. of a stone which grew to an iron bodkin in the bladder, XV, 882—Description of a stone in the bladder weighing 2 lbs. 3 oz. 6 drms. 1015—Shell found in the kidney, Dr. Pierce, 1018—Stones voided *per penem*, Dr. Cole, 1162—Large stone voided by a female, 1271—Stones extracted from the female bladder without cutting, Dr. Molineux, (A.D. 1690) XVII, 817—Stone weighing 2 oz. 2 drs. 26 grs. voided by a woman, ibid, 818—On the generation of stone, ibid, 818—Stone weighing 9½ oz. cut from a woman with success, by Mr. Wood, XVIII, 103—Two stones cut out of the meatus urinarius, which had lain there 20 years, and been formed after lithotomy, Mr. Bernard, (A.D. 1694-7,) XIX, 250—Account of a stone in the bladder, weighing 3 lbs. 3 oz. also a stone cut out successfully which adhered to the bladder, Dr. Preston, 310—Way of cutting

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—— of the Royal Irish Academy, 4to. 10 vols. Dublin, 1787-1806—An experimental inquiry into the nature of gravelly and calculous concretions in the human subject, and the effects of alkaline and acid substances on them, in and out of the body, by Thos. Egan, X, 229.

—— of the Royal Society of Edinburgh, 4to. 8 vols. 1788-1818—Letter from President Virly, on the use of caustic alkali in the cure of gravel, II, 22.

—— of the Provincial Medical and Surgical Association, 8vo. 2 vols. 1833-4—Case of lithotomy by the rectum, Mr. Dawson, II.

Treyeran (J. A.) Parallèle des diverses méthodes proposées pour l'extraction des calculs vésicaux par l'appareil latéral, et déscription d'un nouveau procédé préferable à tous ceux usités jusqu' à ce jour, 8vo. Paris, 1802.

Troja, über krankheiten der nieren. (Ploucquet, I, 185.)

Trye (C. B.) Essay on some of the stages of the operation of cutting for the stone, 8vo. London, 1811.

Tulpius, (N.) Observationes Medicæ, 12mo.

Amstel. 1672—Calculus renum, 165—Do. ureterem obturans, 166—Mictus lapidosus, 171—Membrana lapidescens, 172—Vesica à calculo consumpta, 182—Lapides bezoartici in homine, 186—Calculus vesicæ adnatus, 187—Do. vesicâ arctè circumdatus, 190—Do. trium unciarum spontè excretus, 191—Modus eximendi calculum ex urethrâ, 193—Turunda lapidescens, 195—Calculus per lumbos excretus, 320—Æger sibi calculum præcidens, 324—Calculus urethræ, 331—Mictus calculorum fractorum, 333—Calculus vesicæ cervicem deserens, 354.

Turck (S. A.) de l'incision pratiquée par Celse dans l'opération de la taille chez les hommes, 4to. Strasbourg, 1818.

Turner (W.) a newe boke of the natures and properties of all wines that are commonly used here in England; with a confutation of an errour of some men that holde that rhenish and other small wines ought not to be drunken of them that either have or are in danger of the stone, &c. 8vo. Lond. 1568. (Watts Bibl. Br.)

Turquet (J. M.) de nephritide, Genev. 1640.

Untzerus (M.) de renum calculo, 4to. Magdeburg, 1623.

Van Leew (J. F.) Diss. de calculo in genere, Lovan. 1782. (Coll. Diss. Lovan. II, 239.)

Varandacus (J.) de affectibus renum et vesicæ, 8vo. Hanan, 1617. (Ploucquet.)

Varus, Disp. de calculo renum et vesicæ, Jenæ, 1634.

Vater (A.) Obs. rarissimæ generationem calculorum in corpore humano illustrantes, Wittembergæ, 1726. (Halleri Disp. Chir. IV, 1.)

—— de lithontriptico novo Anglicano, Wittembergæ, 1741.

Vater (C.) de nephritide verâ, ejusque curatione legitimâ, Wittembergæ, 1718.

Velde (J.) Disp. de calculo humano, Harderv. 1720.

Venette (Nicolas) Traité des pierres qui s'engendrent dans les terres et dans les animaux, où l'on parle exactement des causes qui les forment dans les hommes, la méthode de les prevenir, et les abus pour s'en garantir et pour les chasser même hors du corps, 18vo. Amsterdam, 1701.

Verdries (J. M.) Disp. de inflammatione ureterum et processuum peritonei, Giess. 1704.

Verhagen (M.) Disp. de nephritide, Leidæ, 1726.

Vesti (J.) Diss. de lapidicinâ microcosmicâ sive de calculo renum et vesicæ, 4to. Erfurt. 1688.

Vicq d'Azir, Verhandlung von der lithotomie, Francof. 1733.

Vidal, Traité sur la production des pierres dans le corps humain, 12mo. Chambery, 1723.

Volckamer (J. G.) Epistola de calculo frangendo, 4to. Francof. 1669.

Vouldy (G. du) Discours des accidens arrivés en l'extraction de deux pierres, avec les particularités de l' opération, Paris, 1674.

Waldschmidt (J. J.) de calculo renum, 1703.

—— (G. U.) de calculo renum, Kiel, 1730.

Waldman, Disquisitio in lithotomiam, Marburgi, 1803.

Wandelaar (H.) Disp. de nephritide, Leidæ, 1711.

Walter (F. A.) Einige krankheiten der nieren und harnblase untersucht, und durch leichenoeffnungen bestätigt, 4to. Berlin, 1800.

Warner (J.) Cases in surgery, 8vo. London, 1754—A singular case of stone, 89—A piece of bone, together with a stone in the bladder, successfully extracted, 92—Symptoms of stone from size of the hymen, 95.

Webel (G. C.) Disp. de intempestivo diureticorum usu, frequentè adfectuum nephriticorum causa, Hallæ, 1752.

Wecker (G.) de lithiasi, 4to. Basil. 1592.

Wedelius (J. A.) Proemium de liquore non corrosivo lapides duriores absumente, Jenæ, 1720. (Halleri Disp. Chir. IV, 325.)

—— Disp. de calculo renum et vesicæ, pathologiâ Hippocraticâ confirmata, Jenæ, 1718.

Wedelius (G. W.) Diss. "Æger nephritide laborans," Jenæ, 1680.

—— Disp. de calculi mechanismo, Jenæ, 1701.

—— Diss. de lithotomiâ, 4to. Jenæ, 1704.

Weinhold (C. A.) über die ursachen des nicht-

auffindens der harnblasensteine nach gemachter operation der lithotomie, 8vo. Würzburg, 1816. (Bernstein Gesch. der Chir. II, 565.)

Weickmanns (J.) Bericht von dem tode J. Schuders, nebst einem abrisse der grösten bey ihm gefundenen steine, und relation des chirurgi der dem körper eröfnet, Lipsiæ, 1701.

Weise (J. G. F.) de alto adparatu, Helmstadt, 1728. (Halleri Disp. Chir. IV, 105.)

Weisman (E. T.) Historia lithotocæ Mulieris, Tubingæ, 1716. (Halleri Disp. ad Morb. III, 501.)

Werner (A.) de colicâ passione, calculo renum et vesicæ, Witteberg, 1576.

Werth, Diss. de calculi ortu frequentiore in rene sinistro, quàm dextro, illiusque causâ, Hallæ, 1776.

Westphal (A.) Diss. de nephrotomiâ, 4to. Griefswald, 1766.

Wetzlar (G.) Beiträge zur kentniss des menschlichen harnes und der entstehung der harnsteine, mit einer vorrede und einigen anmerkungen begleitet von F. Wurzer, 8vo. Frankf. am Main, 1821.

Whytt (Robert, M.D.) Essay on the virtues of lime-water in the cure of the stone, with an appendix, containing the case of the Hon. H. Walpole, written by himself, 12mo. Edinb. 1752.

Whitaker, an enquiry into the solvents of stone, 8vo. London, 1721.

Widt (J. D.) Ἀθολογια, Argentorati, 1663.

Wiedeman (F.) von stein und bruchschneiden, wie auch von staarstechen, 8vo. Vindel. 1719. (Heisteri Inst. Chir.)

Wiel (—— vander) Diss. de renum calculo, Lugd. Bat. 1712.

Weil (Stalpart vander) Observationes Med. Chir. Rariores, 2 tom. Leidæ, 1727—Urinæ transitus renis calculo per sedecim dies obstructus, I, 217—Calculus per ulcus prope inguen emissus, 376—Do. per inguen prodiens, 379-381.

Wilmer (B.) Cases and remarks in surgery, 8vo. London, 1779—An uncommon case of lithotomy, 151—A description of the present method of operating for the stone, 156.

Willich (J.) Disp. de nephritide, Leidæ, 1702.

Wilson (A. P.) An enquiry into the remote causes of urinary gravel, 8vo. Edinb. (Libr. of R. C. S. L.)

Willer (J. J.) Disp. de morbis tartareis in genere, Marburg. 1747.

Winger (F. B.) Disp. de calculo systematis ouropoëtici, Wien. 1776.

Winslow (J.) Lettre à M. Morand sur l'opération de la taille au haut appareil, Paris, 1728. (Cfr. Morand.)

Wolf, Diss. de lithontripticorum usu, Erford, 1801.

Wolf (L. J.) de nephritide, Leidæ, 1735.

Wormius (O.) Disp. de calculo renum et vesicæ, 4to. Hafniæ, 1651.

Wurth, Casûs ex calculo vesicæ orti descriptio, 4to. Arnheim, 1741.

Wurzer (F.) cfr. Wetzlar.

Yvelin, Disp. "Non ergo nephriticis à calculo lithontriptica," Paris, 1736.

Yelloly (John, M.D.) Remarks on the tendency to calculous diseases; with observations on the nature of urinary concretions, and an analysis of a large part of the collection belonging to the Norfolk and Norwich Hospital (from the Philosoph. Trans.) 4to. Lond. 1829—Do. on the tendency to calculous diseases and on the concretions to which such diseases give rise, (from the Philosoph. Trans. sequel to the preceding) 4to. Lond. 1830.

Zeiden, Diss. de renum lithiasi, sive calculis, Lipsiæ, 1638.

Ziegenhorn (C. A.) Observationes rarissimæ generationem calculorum in corpore humano illustrantes, Wittembergæ, 1726. (Halleri Disp. Chir. IV, 1.)

Ziegethan, Diss. de calculo in genere, Ingolst. 1759.

Zipfel (J.) vom schaarbock, griesten und podagra, 8vo. Dresden, 1678. (Ploucquet Lit. Med. Digest. I, 179.)

Zodiacus Medico-gallicus à N. de Bleguy, 4to.

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Zuber (A. C.) Diss. de vesicæ urinariæ morbis, Argentor. 1771.

EXPLANATION OF ABBREVIATIONS.

Cfr. and *Ext.* are the usual abbreviations for the words "confer" and "extat." The rest are classed in three orders;—the *first* pointing out the libraries in which certain works are to be found;—the *second* referring to collections containing a reprint of a work;—and the *third* denoting the authority for the title of certain treatises, which the author has neither inspected nor verified by concurring testimony of several writers.

First Order.—*Libr. of Lond. Coll. of Phys.* Library of the Royal College of Physicians of London—*Libr. of R. C. S. L.* Library of the Royal College of Surgeons in London—*Libr. of Med. Soc. Ed.* Library of Medical Society of Edinburgh—*Med. Chir. Libr.* Library of the Royal Medical and Chirurgical Society of London—*Norwich Med. Libr.* The Norwich Medical Library—*Norwich Pub. Libr.* The Norwich Public Library.

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A HISTORY OF THE VARIOLOUS EPIDEMIC, which occurred in Norwich in the year 1819, and destroyed 530 individuals; with an estimate of the protection afforded by Vaccination, and a review of past and present opinions upon Chicken-pox and modified Small-pox, 8vo. London, 1820.

A MEMOIR OF THE LIFE OF EDWARD RIGBY, M.D., prefixed to the 6th edition of his Essay on the Uterine Hæmorrhage, 8vo. London, 1822.